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United Nations

Report of the Committee on the Peaceful Uses of Outer Space

Fifty-ninth session
(8-17 June 2016)

General Assembly
Official Records
Seventy-first Session
Supplement No. 20

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Note

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[28 June 2016]

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Chapter I

Introduction

1. The Committee on the Peaceful Uses of Outer Space held its fifty-ninth session in Vienna from 8 to 17 June 2016. The officers of the Committee were as follows:

Chair:	David Kendall (Canada)
First Vice-Chair:	Vladimir Galuska (Czech Republic)
Second Vice-Chair/Rapporteur:	Omar Shareef Hamad Eisa (Sudan)

A. Meetings of subsidiary bodies

2. The Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space held its fifty-third session in Vienna from 15 to 26 February 2016, under the chairmanship of V. K. Dadhwal (India). The report of the Subcommittee was before the Committee (A/AC.105/1109).

3. The Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space held its fifty-fifth session in Vienna from 4 to 15 April 2016, under the chairmanship of Hellmut Lagos Koller (Chile). The report of the Subcommittee was before the Committee (A/AC.105/1113).

B. Adoption of the agenda

4. At its opening meeting, the Committee adopted the following agenda:

1. Opening of the session.
2. Adoption of the agenda.
3. Election of officers.
4. Statement by the Chair.
5. General exchange of views.
6. Ways and means of maintaining outer space for peaceful purposes.
7. Report of the Scientific and Technical Subcommittee on its fifty-third session.
8. Report of the Legal Subcommittee on its fifty-fifth session.
9. Space and sustainable development.
10. Spin-off benefits of space technology: review of current status.
11. Space and water.
12. Space and climate change.
13. Use of space technology in the United Nations system.

14. Future role of the Committee.

15. Other matters.

16. Report of the Committee to the General Assembly.

C. Election of officers

5. At the 706th meeting of the Committee, on 8 June, David Kendall (Canada) was elected Chair of the Committee, Vladimir Galuska (Czech Republic) was elected First Vice-Chair and Omar Shareef Hamad Eisa (Sudan) was elected Second Vice-Chair/Rapporteur for 2016 and 2017.

6. At the same meeting, the Committee endorsed the election of V. K. Dadhwal (India) as Chair of the fifty-third session of the Scientific and Technical Subcommittee, Chiaki Mukai (Japan) as Chair of the fifty-fourth session of that Subcommittee and Hellmut Lagos Koller (Chile) as Chair of the Legal Subcommittee for a two-year term of office, starting with the sessions of the Subcommittees held in 2016.

D. Membership

7. In accordance with General Assembly resolutions 1472 A (XIV), 1721 E (XVI), 3182 (XXVIII), 32/196 B, 35/16, 49/33, 56/51, 57/116, 59/116, 62/217, 65/97, 66/71 and 68/75 and decisions 45/315, 67/412, 67/528 and 70/518, the Committee on the Peaceful Uses of Outer Space was composed of the following 83 States: Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Benin, Bolivia (Plurinational State of), Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Chad, Chile, China, Colombia, Costa Rica, Cuba, Czech Republic, Ecuador, Egypt, El Salvador, France, Germany, Ghana, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Lebanon, Libya, Luxembourg, Malaysia, Mexico, Mongolia, Morocco, Netherlands, Nicaragua, Niger, Nigeria, Oman, Pakistan, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Senegal, Sierra Leone, Slovakia, South Africa, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Syrian Arab Republic, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay, Venezuela (Bolivarian Republic of) and Viet Nam.

E. Attendance

8. Representatives of the following 70 States members of the Committee attended the session: Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Bolivia (Plurinational State of), Brazil, Bulgaria, Burkina Faso, Canada, Chile, China, Colombia, Costa Rica, Cuba, Czech Republic, Ecuador, Egypt, El Salvador, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Israel, Italy, Japan, Kenya, Lebanon, Luxembourg, Malaysia, Mexico, Morocco, Netherlands, Nicaragua, Nigeria, Oman, Pakistan, Peru,

Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Slovakia, South Africa, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Syrian Arab Republic, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States, Venezuela (Bolivarian Republic of) and Viet Nam.

9. At its 706th meeting, the Committee decided to invite, at their request, observers for Cyprus, the Dominican Republic, New Zealand and Panama, as well as the Holy See, to attend its fifty-ninth session and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that it would not involve any decision of the Committee concerning status.

10. At the same meeting, the Committee decided to invite, at the request of the Sovereign Military Order of Malta, the observer for that organization to attend the session and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that it would not involve any decision of the Committee concerning status.

11. Also at the same meeting, the Committee decided to invite, at the request of the European Union, the observer for that organization to attend the session, in accordance with General Assembly resolution 65/276, entitled "Participation of the European Union in the work of the United Nations", and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that it would not involve any decision of the Committee concerning status.

12. Observers for the Office for Disarmament Affairs of the Secretariat and the International Telecommunication Union (ITU) attended the session.

13. The session was attended by observers for the following intergovernmental organizations with permanent observer status with the Committee: Asia-Pacific Space Cooperation Organization, Regional Center of Remote Sensing of North African States, European Organisation for Astronomical Research in the Southern Hemisphere, European Space Agency (ESA), European Telecommunications Satellite Organization, Inter-Islamic Network on Space Sciences and Technology, International Mobile Satellite Organization and International Telecommunications Satellite Organization.

14. The session was also attended by observers for the following non-governmental organizations with permanent observer status with the Committee: African Association of Remote Sensing of the Environment, Association of Space Explorers (ASE), European Space Policy Institute, International Association for the Advancement of Space Safety, International Astronautical Federation (IAF), International Institute of Space Law, International Society for Photogrammetry and Remote Sensing, Prince Sultan bin Abdulaziz International Prize for Water, Secure World Foundation, Space Generation Advisory Council (SGAC) and World Space Week Association.

15. At its 706th meeting, the Committee decided to invite, at the request of the International Air Transport Association (IATA), the observer for that organization to attend its fifty-ninth session and to address it, as appropriate, on the understanding

that it would be without prejudice to further requests of that nature and that it would not involve any decision of the Committee concerning status.

16. A list of representatives of States members of the Committee, States not members of the Committee, United Nations entities and other organizations attending the session is contained in A/AC.105/2016/INF/1 and Corr.1.

F. General statements

17. Statements were made by representatives of the following States members of the Committee during the general exchange of views: Algeria, Argentina, Austria, Brazil, Canada, China, Colombia, Costa Rica, Cuba, Czech Republic, Ecuador, Egypt, El Salvador, France, Germany, Hungary, India, Indonesia, Iran (Islamic Republic of), Israel, Italy, Japan, Mexico, Morocco, Nigeria, Pakistan, Philippines, Poland, Republic of Korea, Romania, Russian Federation, Slovakia, South Africa, Sri Lanka, Sudan, Sweden, Switzerland, Syrian Arab Republic, Thailand, United Kingdom, United States and Venezuela (Bolivarian Republic of). Statements were also made by the representative of Argentina on behalf of the Group of 77 and China, by the representative of the European Union, by the observer for the Dominican Republic on behalf of the Group of Latin American and Caribbean States and by the representative of the Sudan on behalf of the African Group. The observer for New Zealand made a statement. The observers for the African Association of Remote Sensing of the Environment, the Asia-Pacific Space Cooperation Organization, the Regional Center of Remote Sensing of North African States, ESA, the European Organisation for Astronomical Research in the Southern Hemisphere, the European Telecommunications Satellite Organization, IAF, IATA, SGAC, the Secure World Foundation and the World Space Week Association also made statements.

18. The Committee welcomed the election of David Kendall (Canada) as its Chair, Vladimir Galuska (Czech Republic) as its First Vice-Chair and Omar Shareef Hamad Eisa (Sudan) as its Second Vice-Chair/Rapporteur of the Committee for the period 2016-2017.

19. The Committee expressed its appreciation to Azzedine Oussedik (Algeria), the outgoing Chair, Diego Stacey Moreno and Rosa Olinda Vásquez Orozco (Ecuador), the outgoing First Vice-Chairs, and Samir Mohammed Raouf (Iraq) and Xinmin Ma (China), the outgoing Second Vice-Chairs/Rapporteurs, for their excellent work and achievements during their terms of office.

20. At the 706th meeting, the Chair delivered a statement highlighting various cross-cutting areas in the work of the Committee, its Subcommittees and the Office for Outer Space Affairs of the Secretariat that posed opportunities for more effectively addressing current challenges in outer space. He stressed the need for the members of the Committee to work together in order to find constructive, consensual solutions to important issues relating to the mandate of the Committee. Such issues included improving the safety and security of the space environment for its use by all States, contributing to a healthy and essential debate on the major treaties, agreements and conventions in order to reflect the current global space situation and, specifically, assisting States in benefiting from the utilization of space, irrespective of the stage of their economic or scientific and technical

development. The Chair also noted the importance of the 2018 thematic cycle of the Committee and its two Subcommittees dedicated to the fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE+50) as an opportunity for steering the way towards strengthening the Committee's mandate to more effectively address current challenges and opportunities in the area of enhanced international cooperation in the peaceful uses of outer space.

21. At the same meeting, the Director of the Office for Outer Space Affairs made a statement in which she reviewed the work carried out by the Office during the previous year, including outreach activities and cooperation and coordination with United Nations entities and international intergovernmental and non-governmental organizations. The Director highlighted the role of the Office in discharging the responsibilities of the Secretary-General under the United Nations treaties on outer space and in maintaining the Register of Objects Launched into Outer Space under the obligations set out in the Convention on Registration of Objects Launched into Outer Space. The Register was the Convention's core mechanism for creating transparency and building confidence in outer space activities. She also described the Office's work in coordinating activities among United Nations entities in the areas of sustainable development, global health, emerging issues in commercial space transportation and regulatory aspects of small satellites as examples of the successful implementation of the mandate of the Office to lead the Inter-Agency Meeting on Outer Space Activities (UN-Space). She highlighted the current, unfavourable financial situation of the Office and stressed the importance of the availability of financial and other resources for the successful implementation of its programme of work. The situation required addressing the Office's human resources shortfall, and she called on Member States to consider supplementing the Office's regular budget with extrabudgetary resources, both monetary and in kind.

22. At its 710th meeting, on 10 June 2016, the Committee invited the Director-General of the United Nations Office at Vienna and Executive Director of the United Nations Office on Drugs and Crime, Yury Fedotov, to make a statement. He highlighted that space tools and space-derived information could play a transformative role in helping countries achieve the Sustainable Development Goals, and that the Office for Outer Space Affairs was an essential partner in those global efforts. He emphasized the importance of space-based technology and Earth observation for disaster management and emergency response, which was reinforced by the Sendai Framework for Disaster Risk Reduction 2015-2030. He also drew attention to the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), the tenth anniversary of which was taking place in 2016. The Director-General expressed his commitment to supporting the Director of the Office for Outer Space Affairs in fostering the Committee as a unique global platform to promote international cooperation in the peaceful exploration and use of outer space.

23. The Committee heard statements by heads and senior managers of the national space agencies of France, Italy and the United States, during which they conveyed to the Committee the major highlights of the work of those agencies to address the global problems of humanity through the use of space technologies, national coordinated efforts and regional and international cooperation.

24. The Committee heard the following presentations:

(a) "Follow-up on COP21: space endeavour towards climate and growth", by the representative of France;

(b) "Information platform on objects and events in space", by the representative of the Russian Federation;

(c) "Student activities in space: nanosatellites, experimental rockets and mission to the Moon", by the representative of Austria;

(d) "Regional Centre for Space Science and Technology Education in Asia and Pacific (China) website and its working progress", by the representative of China;

(e) "The International Mars Analogue Research Programme of the Austrian Space Forum", by the representative of Austria;

(f) "Italian contribution to Space Exploration through ALTEC", by the representative of Italy;

(g) "SGAC: 17 years since UNISPACE III", by the observer of SGAC;

(h) "KiboCUBE: UNOOSA/JAXA cooperation programme on the deployment of CubeSat from the ISS 'Kibo'", by the representative of Japan;

(i) "Journey to Mars via global space collaboration", by the representative of the United States;

(j) "China manned space programme: its achievements and future developments", by the representative of China;

(k) "A well-rounded approach to the global dimension of space: ASI-SIOI-ISGI-CNR master's course in institutions and space policies", by the representative of Italy;

(l) "ASTROSAT: India's space-based astronomical observatory", by the representative of India.

25. The Committee noted with appreciation the holding, on the margins of the session, of the symposium entitled "Looking to the future: changing international relations and legal issues facing space activities" by the Faculty of Law of the University of Vienna, organized by Austria.

26. The view was expressed that the continued attempts by the Democratic People's Republic of Korea to legitimize its ballistic missile-related programme as a peaceful space activity was highly regrettable. The delegation expressing that view reiterated that the Security Council, in its resolution 2270 (2016), had prohibited the country from engaging in any form of technical cooperation with other Member States on launches using ballistic missile technology.

27. Some delegations expressed the view that the Committee played a leading role in regulating space exploration through its two Subcommittees and that it remained the appropriate forum for discussion and cooperation among States in order to ensure the continued peaceful exploration and use of outer space.

28. Some delegations reaffirmed the commitment of their countries to the peaceful use and exploration of outer space and emphasized the following principles:

universal and equal access to outer space for all countries without discrimination, regardless of their level of scientific, technical and economic development, as well as the equitable and rational use of outer space for the benefit of all humankind; non-appropriation of outer space, including the Moon and other celestial bodies, by claim of sovereignty, use, occupation or any other means; non-militarization of outer space, which should never be used for the installation of weapons of any kind, and, as a common heritage of humankind, its strict use for the improvement of living conditions and peace among the peoples inhabiting planet Earth; international responsibility of States for their national space activities; and regional cooperation to promote space activities, as established by the General Assembly and other international forums.

29. Some delegations expressed the view that transparency and confidence-building measures could make an important contribution to the security, safety and sustainability of activities in outer space. The delegations expressing that view were also of the view that a non-legally binding agreement, to be negotiated within the United Nations, would be the right way to proceed in order to increase international cooperation in space, establish standards of responsible behaviour across the full range of space activities, make commitments to non-interference in the peaceful exploration and use of outer space and facilitate equitable access to outer space and increase transparency of space activities.

30. The view was expressed that safety conditions, as applied to outer space, were a result of the interaction of many factors, and that it was clear that the concept of space traffic management could only be achieved under a full-fledged safety regime for space operations.

31. The view was expressed that there was a need to care for the outer space environment in the same way that there was a need to care for the planet and to avoid creating an artificial divide between the planet and the space around it, so as to allow future generations to enjoy the benefits of outer space.

32. The view was expressed that those States members of the Committee that had not yet done so should consider adherence to the four core United Nations treaties on outer space and, at a minimum, to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, in view of the upcoming fiftieth anniversary of that Treaty, which would occur in conjunction with UNISPACE+50.

G. Adoption of the report of the Committee

33. After considering the various items before it, the Committee, at its 721st meeting, on 17 June 2016, adopted its report to the General Assembly containing the recommendations and decisions set out below.

Chapter II

Recommendations and decisions

A. Ways and means of maintaining outer space for peaceful purposes

34. In accordance with paragraph 13 of General Assembly resolution 70/82, the Committee continued its consideration, as a matter of priority, of ways and means of maintaining outer space for peaceful purposes and its consideration of the broader perspective of space security and associated matters that would be instrumental in ensuring the safe and responsible conduct of space activities, including ways to promote international, regional and interregional cooperation to that end.

35. The representatives of Canada, Japan, Pakistan, the Russian Federation, South Africa, Switzerland, the United States and Venezuela (Bolivarian Republic of) made statements under the item. During the general exchange of views, statements relating to the item were also made by other member States.

36. The Committee heard a presentation entitled "Space Security Index", by the representative of Canada.

37. Some delegations expressed the view that the report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities (A/68/189) and General Assembly resolution 69/38, in which the Assembly encouraged Member States to continue to review and implement, to the greatest extent practicable, the proposed transparency and confidence-building measures contained in that report, provided a solid basis for States to share information and improve mutual understanding of their activities in outer space and would help prevent military confrontation and foster regional and global stability.

38. The view was expressed that a report should be created to identify how the Committee and its two Subcommittees were contributing to implementing the recommendations of the Group of Governmental Experts, and that such a report should be updated regularly to track and record progress achieved over time.

39. Some delegations expressed the view that the existing legal regime with respect to outer space was not sufficient to prevent the placement of weapons in outer space or to address issues concerning the space environment, and that it was important to further develop international space law in order to maintain outer space for peaceful purposes. Those delegations were of the view that, in order to ensure that outer space was used peacefully and to prevent its militarization, the preparation of binding international legal instruments was necessary.

40. Some delegations expressed the view that, in order to maintain the peaceful nature of space activities and prevent the placement of weapons in outer space, it was essential for the Committee to encourage greater cooperation and linkages across the United Nations system, such as with the First Committee of the General Assembly and the Conference on Disarmament. Those delegations were also of the view that the Committee had a duty to suggest, recommend and generate synergies with those bodies, with a view to formulating an approach to ways and means of maintaining outer space for peaceful purposes.

41. The view was expressed that, in order to clarify their diverging views as to what constituted "exclusively peaceful purposes" within the meaning of the Outer Space Treaty, States should be invited to present their views on how the exploration and use of outer space for exclusively peaceful purposes was to be understood, functionally and practically.

42. The view was expressed that the Committee had been created exclusively to promote international cooperation with respect to the peaceful uses of outer space and that disarmament issues were more appropriately dealt with in other forums, such as the First Committee and the Conference on Disarmament. The delegation expressing that view was also of the view that no actions by the Committee were needed regarding the weaponization of outer space and that there was no scarcity of appropriate multilateral mechanisms under which disarmament could be discussed.

43. The view was expressed that the Committee could have a role in reviewing the implementation of specific unilateral, bilateral, regional and multilateral transparency and confidence-building measures in outer space, as well as in discussing new ones.

44. The Committee noted with satisfaction continuous developments in a number of cooperative endeavours that were being pursued at the international, regional and interregional levels by various actors, such as States and international intergovernmental and non-governmental organizations, and emphasized that such cooperation was essential for strengthening the peaceful uses of outer space and for assisting States in the development of their space capabilities. In that regard, the Committee noted the important role that bilateral and multilateral agreements played in promoting common space exploration objectives and cooperative and complementary space exploration missions.

45. Some delegations expressed the view that the United Nations was essential for strengthening and developing cooperation and collaboration among countries, in particular with regard to scientific and space technology, and for maximizing space resources for common prosperity, security and the long-term sustainability of outer space activities. The delegations expressing that view were also of the view that solid cooperation should enhance information-sharing and technical cooperation among countries in line with the principles of friendship, equal partnership and mutual respect.

46. The Committee noted that the sixth African Leadership Conference on Space Science and Technology for Sustainable Development had been held in Sharm el-Sheikh, Egypt, from 1 to 4 December 2015 and that the Conference had discussed the African Space Policy and Strategy, which had subsequently been adopted by the African Union.

47. The Committee recalled the Pachuca Declaration, adopted by the Sixth Space Conference of the Americas, held in Pachuca, Mexico, from 15 to 19 November 2010, pursuant to which a regional space cooperation mechanism for the near future had been developed and, inter alia, an advisory group of space experts had been created. The Committee noted that the pro tempore secretariat of the Seventh Space Conference of the Americas was continuing the implementation of the Pachuca Declaration. The Committee also noted that the Seventh Space Conference of the Americas had been successfully held in Managua from 17 to 19 November 2015, and had resulted in the adoption of the Declaration of Managua and an action plan.

The Committee further noted that the Government of the Bolivarian Republic of Venezuela had expressed its willingness to host the Eighth Space Conference of the Americas.

48. The Committee noted that the twenty-second session of the Asia-Pacific Regional Space Agency Forum had been successfully held in Bali, Indonesia, from 1 to 4 December 2015, under the theme "Sharing solutions through synergy in space". The Committee also noted that the twenty-third session would be held in Manila from 15 to 18 November 2016.

49. Some delegations expressed the view that the Committee played a crucial role in promoting cooperation among States in space activities and that the Committee provided a unique forum for States to exchange information in that regard. Those delegations also expressed the view that there were tangible opportunities to further enhance international cooperation, in accordance with the Committee's mandate.

50. The Committee agreed that, through its work in the scientific, technical and legal fields, as well as through the promotion of international dialogue and exchange of information on various topics relating to the exploration and use of outer space, it had a fundamental role to play in enhancing transparency and confidence-building among States, as well as in ensuring that outer space was maintained for peaceful purposes.

51. The Committee recommended that at its sixtieth session, in 2017, consideration of the item on ways and means of maintaining outer space for peaceful purposes should be continued, on a priority basis.

B. Report of the Scientific and Technical Subcommittee on its fifty-third session

52. The Committee took note with appreciation of the report of the Scientific and Technical Subcommittee on its fifty-third session (A/AC.105/1109), which contained the results of its deliberations on the items considered by the Subcommittee in accordance with General Assembly resolution 70/82.

53. The Committee expressed its appreciation to V. K. Dadhwal (India) for his able leadership during the fifty-third session of the Subcommittee.

54. The representatives of Algeria, Australia, Austria, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Oman, Pakistan, the Republic of Korea, the Russian Federation, Turkey, the United Kingdom, the United States and Venezuela (Bolivarian Republic of) made statements under the item. Statements were also made by the representative of Argentina on behalf of the Group of 77 and China and the observer for the Dominican Republic on behalf of the Group of Latin American and Caribbean States. The observers for ASE and the International Association for the Advancement of Space Safety also made statements under the item. During the general exchange of views, statements relating to the item were also made by other member States.

55. The Committee heard the following presentations:

(a) "Open universe initiative", by the representative of Italy;

(b) "United Nations/Japan Long-term Fellowship Programme on Nanosatellite Technologies", by the representative of Japan;

(c) "Education under the United Nations/Japan (PNST) Programme: perspectives of a graduate", by the representative of the Sudan;

(d) "UN-SPIDER+10 anniversary conference (7-8 June 2016): enhancing the resilience of nations through use of space-based information", by the Office for Outer Space Affairs.

1. United Nations Programme on Space Applications

(a) Activities of the United Nations Programme on Space Applications

56. The Committee took note of the discussion of the Subcommittee under the item on the activities of the United Nations Programme on Space Applications, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 46-56).

57. The Committee noted that the priority areas of the Programme were environmental monitoring, natural resource management, satellite communications for tele-education and telemedicine applications, disaster risk reduction, the use of global navigation satellite systems, the Basic Space Science Initiative, space law, climate change, the Basic Space Technology Initiative and the Human Space Technology Initiative, and biodiversity and ecosystems.

58. The Committee took note of the activities of the Programme carried out in 2015, as presented in the report of the Subcommittee (A/AC.105/1109, paras. 52-55) and in the report of the Expert on Space Applications (A/AC.105/1107, annex I).

59. The Committee noted with concern the limited financial resources available to implement the Programme and appealed to States and organizations to continue supporting the Programme through voluntary contributions.

(i) Conferences, training courses and workshops of the United Nations Programme on Space Applications

60. The Committee noted the workshops and symposiums planned for the remainder of 2016, and those held earlier in the year, and expressed its appreciation to Austria, Costa Rica, India, Iran (Islamic Republic of), Kenya, Mexico, Nepal and South Africa for hosting, or agreeing to host, those activities (see A/AC.105/1107, annex II).

(ii) Long-term fellowships for in-depth training

61. The Committee noted that the Government of Japan, through the Kyushu Institute of Technology, had continued to contribute to the Basic Space Technology Initiative by providing long-term fellowship programme opportunities for students from developing countries under the United Nations/Japan Long-term Fellowship Programme on Nanosatellite Technologies.

62. The Committee noted that the Office for Outer Space Affairs, in collaboration with the Japan Aerospace Exploration Agency (JAXA), would provide CubeSat deployment opportunities from the Japanese Experiment Module (Kibo) of the International Space Station under the KiboCUBE call for proposals.

(iii) Technical advisory services

63. The Committee noted with appreciation the technical advisory services provided under the United Nations Programme on Space Applications in support of activities and projects promoting regional cooperation in space applications, as referred to in the report of the Expert on Space Applications (A/AC.105/1107, paras. 32-37).

(iv) Regional centres for space science and technology education, affiliated to the United Nations

64. The Committee noted with satisfaction that the United Nations Programme on Space Applications had continued to emphasize, promote and foster cooperation with Member States at the regional and global levels to support the regional centres for space science and technology education, affiliated to the United Nations. The schedule of nine-month postgraduate courses offered during the period 2014-2016 by the regional centres supported under the Programme was contained in the report of the Expert on Space Applications (A/AC.105/1107, annex III).

65. The Committee expressed its appreciation to the Office for Outer Space Affairs for implementing the United Nations Programme on Space Applications and noted the important role of the Programme in supporting capacity-building in space science technology and its applications, particularly in developing countries.

66. The Committee noted that Argentina would host the seventeenth International Symposium in Remote Sensing and Geographic Information Systems of the Latin American Society for Remote Sensing and Space Information Systems (SELPER) in Puerto Iguazú from 7 to 11 November 2016.

(b) International Satellite System for Search and Rescue

67. The Committee noted with satisfaction that the International Satellite System for Search and Rescue (COSPAS-SARSAT) currently had 40 member States and two participating organizations and that there was additional interest in being associated with the programme. The Committee noted with appreciation that the worldwide coverage for emergency beacons had been made possible by the space segment, which consisted of five polar-orbiting and seven geostationary satellites provided by Canada, France, India, the Russian Federation and the United States, along with the European Organization for the Exploitation of Meteorological Satellites, as well as by the ground-segment contributions of 26 other countries. The Committee also noted that, in 2015, alert data from the system had helped to save 2,400 lives in 850 search and rescue events worldwide.

2. Space technology for socioeconomic development in the context of the United Nations Conference on Sustainable Development and the post-2015 development agenda

68. The Committee took note of the discussion of the Subcommittee under the item on space technology for socioeconomic development in the context of the United Nations Conference on Sustainable Development and the post-2015 development agenda, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 64-80).

69. The Committee endorsed the recommendations and decisions on the item made by the Subcommittee and its Working Group of the Whole (A/AC.105/1109, para. 80).

70. The Committee recalled that the General Assembly, in its resolution 70/82, had reiterated the need to promote the benefits of space technology and its applications in the major United Nations conferences and summits for economic, social and cultural development and related fields, and had recognized that the fundamental significance of space science and technology and their applications for global, regional, national and local sustainable development processes should be promoted in the formulation of policies and programmes of action and their implementation, including through efforts towards achieving the objectives of those conferences and summits and in implementing the 2030 Agenda for Sustainable Development.

71. Some delegations expressed the view that the examination of ways in which space science and technology and their applications could contribute to the implementation of the 2030 Agenda for Sustainable Development should remain part of the work of the Committee.

3. Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment

72. The Committee took note of the discussion of the Subcommittee under the item on matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 81-91).

73. The Committee also noted a number of regional and international initiatives aimed at enhancing the use of remote sensing data in order to support socioeconomic and sustainable development, in particular for the benefit of developing countries.

74. In the course of the discussion, delegations reviewed national and international cooperation programmes on using remote sensing data. A number of areas in which remote sensing data continued to be crucial for well-informed decision-making were singled out. Examples included climate change and atmospheric gas monitoring, disaster management, management of natural resources, illicit-crop monitoring, drought and desertification forecasting, oceanography, coastal and sea level monitoring, rural development, land use and watershed management, agriculture, urban planning, food security, public health, and humanitarian and development aid, in particular for monitoring populations and natural resources in camps for refugees and internally displaced persons.

75. Recognizing the increased relevance and use of remote sensing technology and other space science and technology applications, some delegations called for greater capacity-building for relevant national actors, in particular those in developing countries, when taking preventive action against environmental degradation and related hazards. Those delegations also expressed their support for initiatives that promoted the making available and distribution of space-based data to developing countries at no cost.

76. The Committee noted the number of launches of Earth observation satellites and also noted that a number of cooperative initiatives had been undertaken by developing countries to launch such satellites. The Committee stressed the need to continue enhancing the capacities of developing countries with regard to the use of remote sensing technology.

4. Space debris

77. The Committee took note of the discussion of the Subcommittee under the item on space debris, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 92-113).

78. The Committee endorsed the decisions and recommendations of the Subcommittee on the item (A/AC.105/1109, paras. 97 and 113).

79. The Committee noted with appreciation that some States were already implementing space debris mitigation measures consistent with the Space Debris Mitigation Guidelines of the Committee and/or the Inter-Agency Space Debris Coordination Committee (IADC) Space Debris Mitigation Guidelines, and that other States had developed their own space debris mitigation standards based on those guidelines. In addition, the Committee noted that other States were using the IADC Guidelines and the European Code of Conduct for Space Debris Mitigation as reference points in their regulatory frameworks for national space activities. The Committee also noted that other States had cooperated, in the framework of the ESA space situational awareness programme, to address the issue of space debris.

80. The Committee urged those countries that had not yet done so to consider the voluntary implementation of the Space Debris Mitigation Guidelines of the Committee and/or the IADC Space Debris Mitigation Guidelines.

81. The Committee noted that an increasing number of States were adopting concrete actions to mitigate space debris, including the improvement of the design of launch vehicles and spacecrafts, the deorbiting of satellites, passivation, end-of-life operations and the development of specific software and models for space debris mitigation.

82. Some delegations expressed the view that the future of space activities largely depended on space debris mitigation and removal and that the issue of mitigation of space debris should continue to be treated as a priority.

83. Some delegations expressed the view that the issue of space debris should be addressed in a manner that would not jeopardize the development of the space capabilities of developing countries.

84. Some delegations expressed the view that it was necessary to continue the thorough consideration of the issue of space debris mitigation, in particular by paying greater attention to the problem of debris coming from platforms with nuclear power sources in outer space and to collisions of space objects with space debris and their derivatives, as well as to ways of improving the technology for monitoring space debris.

85. Some delegations expressed the view that States, especially those that were largely responsible for the situation with regard to space debris and those that had

the ability to take action for space debris mitigation, should disseminate information on action taken to reduce the generation of more space debris.

86. The view was expressed that since much of the orbital space debris was a result of the past operations of major spacefaring countries, there was a moral international responsibility on their part to assist emerging spacefaring countries in the implementation of space debris mitigation guidelines through the provision of space situational awareness and conjunction assessment risk analysis systems, as well as financial contributions in order to absorb the additional costs incurred by developing countries with regard to spacecraft design modifications.

87. The view was expressed that the principle of common but differentiated responsibility should be applied to the issue of space debris and that States that created space debris had exclusive responsibility for its removal.

88. The view was expressed that international efforts were necessary with regard to the removal of space debris, and that no space debris removal efforts should be taken in isolation, in view of their potential negative impact on the geostationary orbit and their potential to lead to conflict between States and to the militarization of outer space.

89. The view was expressed that all satellite operators should take appropriate measures to offset the possibility of the creation of space debris.

90. The view was expressed that it was necessary to analyse the possible impact of the deployment of large constellations of satellites in low-Earth orbit and to investigate the end-of-life disposal of constellation members.

91. The view was expressed that the Office for Outer Space Affairs should spearhead efforts to address space debris mitigation by setting up a global holistic programme, defining guidelines, scheduling activities and producing periodic reports.

5. Space-system-based disaster management support

92. The Committee took note of the discussion of the Subcommittee under the item on space-system-based disaster management support, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 114-134).

93. The Committee noted with appreciation the tenth anniversary of UN-SPIDER, a programme of the Office for Outer Space Affairs that had been established by the General Assembly in its resolution 61/110 to provide universal access to all countries and all relevant international and regional organizations to all types of space-based information and services relevant to disaster management to support the full disaster management cycle.

94. The Committee welcomed the activities organized by UN-SPIDER aimed at promoting greater understanding, acceptance and commitment by countries regarding ways of accessing and developing capacity to use all types of space-based information in support of the full disaster management cycle. In that regard, the Committee took note of the UN-SPIDER Knowledge Portal (www.un-spider.org), a web-based platform for information, communication and process support that fostered the exchange of information for sharing experiences, capacity-building and technical advisory support.

95. Some delegations called upon the Office for Outer Space Affairs, through UN-SPIDER, to intensify its capacity-building activities through technical advisory missions and training programmes, in particular in developing countries, to strengthen disaster risk preparedness and emergency response at the national level.

96. In her statement to the Committee at its 706th meeting, on 8 June 2016, the Director of the Office for Outer Space Affairs thanked the Governments of Austria, China and Germany for their commitment to and support of UN-SPIDER since its inception, including through the implementation of UN-SPIDER activities coordinated by the UN-SPIDER offices in Bonn, Beijing and Vienna. The Director stressed that the tenth anniversary of the programme was an opportunity to review the goals and partnerships of UN-SPIDER and to consider how it could better support Member States in the implementation of the 2030 Agenda for Sustainable Development.

97. In that context, the Committee noted with appreciation the tenth anniversary conference of UN-SPIDER, entitled "Enhancing the resilience of nations through use of space-based information", which had been held in Vienna on 7 and 8 June 2016 and had been organized by the Office for Outer Space Affairs and UN-SPIDER partners and donors.

98. The Committee noted with appreciation that the seventh annual UN-SPIDER regional support offices coordination meeting had been held in Vienna on 6 June 2016. The meeting had brought together 13 representatives of regional support offices (of which there were 20 in total). The offices were a strong pillar of UN-SPIDER and contributed to the programme's activities in the areas of capacity-building, institutional strengthening and knowledge management.

99. The Committee noted that UN-SPIDER would hold its sixth annual conference in Beijing, as one of the commitments of the Office for Outer Space Affairs to supporting the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030.

100. The Committee also noted the valuable contribution of the ongoing activities of Member States to increase the availability and use of space-based solutions in support of disaster management, including the Sentinel Asia project and its coordination of emergency observation requests through the Asian Disaster Reduction Centre, the emergency mapping service of the European Earth Observation Programme (Copernicus) and the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters (also called the International Charter on Space and Major Disasters).

6. Recent developments in global navigation satellite systems

101. The Committee took note of the discussion of the Subcommittee under the item on recent developments in global navigation satellite systems (GNSS), as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 135-161).

102. The Committee noted with appreciation that the tenth meeting of the International Committee on Global Navigation Satellite Systems (ICG) and the fifteenth meeting of the Providers' Forum, organized by the Department of State of the United States and the University Corporation for Atmospheric Research, had been held in Boulder, Colorado, United States, from 1 to 6 November 2015. The

Committee noted that the eleventh meeting of ICG in 2016 would be hosted by the Russian Federation.

103. The Committee noted with appreciation the achievements of providers and users of positioning, navigation and timing services in promoting GNSS. It was noted that GNSS had become intrinsic to the modern economy, providing positioning, navigation, timing and value-added services. The Committee also noted that the ultimate goal of ICG was to achieve compatibility and interoperability among GNSS systems, and that ICG, as an informal voluntary body, was a successful example of international collaboration in space.

104. The Committee noted the proposal by ICG that the Subcommittee explore, at its session in 2017, the feasibility of a focused review, within its current agenda item on recent developments in GNSS, of issues related to GNSS spectrum protection and interference detection and mitigation. The Committee also noted that the intent behind the proposal was to raise awareness of the issue among States members of the Committee as part of efforts to achieve the overall goal of promoting effective use of GNSS open services by the global community.

105. The view was expressed that the Office for Outer Space Affairs, as the executive secretariat of ICG, should make a proposal regarding the issues raised by ICG on GNSS spectrum protection and interference detection and mitigation, and that that proposal should be considered by the Subcommittee at its session in 2017.

106. The Committee expressed its appreciation to the Office for Outer Space Affairs for its continued support as executive secretariat for ICG and its Providers' Forum, and for the organization of workshops and training courses focusing on capacity-building in the use of GNSS-related technologies in various fields of science and industry, including on the subject of space weather effects in the ionosphere and their impact on positioning.

107. The Committee noted with appreciation the financial contributions made by the United States and the European Commission to the Office for Outer Space Affairs in support of GNSS-related activities and ICG and its Providers' Forum.

108. The Committee noted that regular meetings among China, India, Japan, the Russian Federation, the United States and the European Union had been held to discuss ways in which interoperability among GNSS providers could be enhanced and services for the global user community could be improved.

109. The Committee also noted that the Indian Regional Navigation Satellite System (NavIC) had been completed, and that the system would provide real-time positioning and timing services over India and the neighbouring region.

7. Space weather

110. The Committee took note of the discussion of the Subcommittee under the item on space weather, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 162-174).

111. The Committee recalled the mandate of the Expert Group on Space Weather of the Scientific and Technical Subcommittee, as endorsed by the Committee at its fifty-eighth session, in 2015 (A/70/20, para. 141), which was to promote awareness, provide guidance and enable communication and cooperation in space weather-

related activities among States members of the Committee and related national and international organizations.

112. The Committee noted with appreciation the progress in the work done by the Expert Group on Space Weather, under the leadership of Canada, as one of the most important mechanisms at the global level for enhancing space weather capabilities, drawing on the best practices of the work of expert group C, on space weather, of the Working Group on the Long-term Sustainability of Outer Space Activities, as well as on the work completed within the Committee on Space Research/International Living With a Star Space Weather Road Map. That work was vital for strengthening the overall reliability of space systems and the ability of such systems to respond to the impact of adverse space weather, which was a shared concern among nations and one of the priorities of the UNISPACE+50 process.

113. The Committee noted that the Expert Group had held its second meeting on the margins of the fifty-third session of the Scientific and Technical Subcommittee and had agreed to continue to meet annually on the margins of the session of the Subcommittee and to use teleconferences or other means to communicate with each other between sessions.

114. The Committee noted with appreciation that the Expert Group had presented a detailed written report on its work to the Scientific and Technical Subcommittee at its fifty-third session. That report also contained a review of its workplan (A/AC.105/C.1/2016/CRP.17).

8. Near-Earth objects

115. The Committee took note of the discussion of the Subcommittee under the item on near-Earth objects, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 175-194).

116. The Committee noted with appreciation that the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG), which had been established in 2014 pursuant to recommendations on an international response to the near-Earth object impact threat that were endorsed by the Committee on the Peaceful Uses of Outer Space at its fifty-sixth session and welcomed by the General Assembly in its resolution 68/75, had provided reports on their activities to the fifty-third session of the Scientific and Technical Subcommittee (A/AC.105/1109, paras. 183-188). The Committee welcomed with appreciation the progress made by IAWN and SMPAG in the area of strengthening international cooperation in mitigating a potential near-Earth object threat, which, in the interest of public safety, required cooperative action on the part of the global community.

117. The Committee noted that SMPAG, at its sixth meeting, held on the margins of the fifty-third session of the Scientific and Technical Subcommittee, had decided, among other things, to establish an ad hoc working group on legal issues in order to, inter alia, formulate and prioritize relevant legal issues and questions requiring clarification with regard to its work, consider legal questions in the context of existing treaties and devise a plan of action to tackle outstanding issues.

118. The Committee noted that the next meetings of the IAWN steering committee and the SMPAG steering committee would take place on the margins of the meeting

of the Division for Planetary Sciences of the American Astronomical Society to be held in Pasadena, California, United States, from 16 to 21 October 2016.

119. The Committee agreed, taking into account the view of the Subcommittee (A/AC.105/1109, paras. 189-190), that the Office for Outer Space Affairs would serve as the permanent secretariat of SMPAG, on the understanding that there would be no implications for the budget of the United Nations. Recalling the agreement of the Subcommittee that the work of IAWN and SMPAG should be facilitated by the United Nations, the Committee noted that the Office for Outer Space Affairs acting as the permanent secretariat of SMPAG would ensure the continuity of the work of SMPAG, independent of its rotating chairmanship, and would provide for institutional memory in terms of keeping documentation records and ensuring consistent annual reporting to the Committee.

120. The Committee endorsed the recommendation of the Subcommittee (A/AC.105/1109, para. 193), which had been presented by ASE, for the global observance of an international asteroid day on 30 June, to be proclaimed by the General Assembly at its seventy-first session, in 2016. Intended as an annual event to be held on the anniversary of the Tunguska impact over Siberia, Russian Federation, on 30 June 1908, the international asteroid day would raise public awareness about the asteroid impact hazard and inform the public about the crisis communication actions to be taken at the global level in the case of a credible near-Earth object threat. It would also be an opportunity to raise awareness of the work undertaken by SMPAG and IAWN, facilitated by the Office for Outer Space Affairs, and of the work undertaken by the Committee and its member States.

9. Use of nuclear power sources in outer space

121. The Committee took note of the discussion of the Subcommittee under the item on the use of nuclear power sources in outer space, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 195-212).

122. The Committee endorsed the decisions and recommendations of the Subcommittee and the Working Group on the Use of Nuclear Power Sources in Outer Space, reconvened under the chairmanship of Sam A. Harbison (United Kingdom) (A/AC.105/1109, para. 211, and annex II).

123. The Committee stressed the value and importance of implementing the voluntary Safety Framework for Nuclear Power Source Applications in Outer Space, which had been developed by the Subcommittee jointly with the International Atomic Energy Agency.

124. Some delegations expressed the view that more consideration should be given to the use of nuclear power sources in terrestrial orbits in order to address the problem of potential collisions of objects containing nuclear power sources and to the accidental re-entry of nuclear power sources into the Earth's atmosphere, which would create a high risk for the Earth's biosphere and be a threat to the universality and indivisibility of human rights and the ecological balance and environmental protection of outer space.

10. Long-term sustainability of outer space activities

125. The Committee took note of the discussion by the Subcommittee under the item on the long-term sustainability of outer space activities, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 213-248).

126. The Committee endorsed the recommendations and decisions on the item made by the Subcommittee regarding the Working Group on the Long-term Sustainability of Outer Space Activities, reconvened under the chairmanship of Peter Martinez (South Africa) (A/AC.105/1109, paras. 221 and 222).

127. The Committee had before it the following:

(a) Draft report of the Working Group on the Long-term Sustainability of Outer Space Activities: working paper by the Chair of the Working Group (A/AC.105/C.1/L.343), which had previously been made available to the Subcommittee at its fifty-second and fifty-third sessions and to the Committee at its fifty-eighth session;

(b) Note by the Secretariat on the updated set of draft guidelines for the long-term sustainability of outer space activities (A/AC.105/L.301);

(c) Working paper entitled "Proposal by Canada, France, Germany, Italy, Japan, Romania, Sweden, the United Kingdom of Great Britain and Northern Ireland, and the United States of America for an expert group on space objects and events" (A/AC.105/L.302);

(d) Working paper submitted by the Russian Federation entitled "Considerations on the set of prime requirements and factors that should shape the policy of international information-sharing serving safety of space operations" (A/AC.105/L.303), which had first been made available to the Subcommittee at its fifty-third session as a conference room paper;

(e) Working paper submitted by the Russian Federation entitled "Reviewing opportunities for achieving the Vienna Consensus on Space Security encompassing several regulatory domains" (A/AC.105/L.304), which had first been made available to the Subcommittee at its fifty-third session as a conference room paper;

(f) Proposal by Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Colombia, Costa Rica, the Czech Republic, France, Germany, Greece, Israel, Italy, Japan, Luxembourg, the Netherlands, Poland, Portugal, the Republic of Korea, Romania, Slovakia, Spain, Sweden, the United Kingdom and the United States entitled "Long-term sustainability of outer space activities: proposal to adopt a first set of guidelines together with a renewed workplan for the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee" (A/AC.105/L.305);

(g) Proposal by Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Colombia, Costa Rica, the Czech Republic, France, Germany, Greece, Israel, Italy, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom entitled "Long-term sustainability of outer space activities: proposal to adopt a first set of guidelines together with a renewed workplan for the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee" (A/AC.105/2016/CRP.11);

(h) Proposal by Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Colombia, Costa Rica, the Czech Republic, France, Germany, Greece, Israel, Italy, Japan, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden, the United Kingdom and the United States entitled "Long-term sustainability of outer space activities: proposal to adopt a first set of guidelines together with a renewed workplan for the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee" (A/AC.105/2016/CRP.11/Rev.1);

(i) Proposal by Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Colombia, Costa Rica, the Czech Republic, France, Germany, Greece, Israel, Italy, Japan, Luxembourg, the Netherlands, Poland, Portugal, the Republic of Korea, Romania, Slovakia, Spain, Sweden, the United Kingdom and the United States entitled "Long-term sustainability of outer space activities: proposal to adopt a first set of guidelines together with a renewed workplan for the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee" (A/AC.105/2016/CRP.11/Rev.2);

(j) Proposal submitted by the United Arab Emirates entitled "Long-term sustainability of outer space activities: proposal to adopt a first set of guidelines together with a renewed workplan for the Working Group on the Long-term Sustainability of Outer Space Activities" (A/AC.105/2016/CRP.12);

(k) Working paper submitted by the Russian Federation entitled "Further ideas on a set of goals of achieving the Vienna Consensus on Space Security and the need for thorough reflection on the modalities of addressing the tangled issues associated with space traffic management and the justifiability of intense expectations of early decisions in this area" (A/AC.105/2016/CRP.13);

(l) Working paper entitled "Proposal by Canada, Egypt, France, Germany, Italy, Japan, Romania, Sweden, the United Kingdom of Great Britain and Northern Ireland, and the United States of America for an expert group on space objects and events" (A/AC.105/2016/CRP.16);

(m) Conference room paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities entitled "Guidelines for the long-term sustainability of outer space activities" (A/AC.105/2016/CRP.17).

128. The Committee noted that the Working Group had held a productive intersessional meeting on 6 and 7 June, just prior to the current session of the Committee. The Committee also noted that the Working Group had met during the current session, using available interpretation services, and that the Chair of the Working Group and interested delegations had held daily informal consultations to further advance their work on the preamble and the draft guidelines.

129. The Committee noted that the Working Group had made substantial progress in developing a set of guidelines for the long-term sustainability of outer space activities, but noted that the various draft guidelines developed by the Working Group were at different stages. The Committee also noted that the Working Group had made substantial progress in developing a preambular text containing background information and a description of the scope and status of the guidelines, including a definition of the long-term sustainability of outer space activities, as well as addressing issues relating to implementation.

130. The Committee agreed that consensus had been reached on the text of the following guidelines, as reflected in the annex to the present report and in A/AC.105/2016/CRP.17:

(a) Guideline 1: Adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities;

(b) Guideline 2: Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities;

(c) Guideline 3: Supervise national space activities;

(d) Guideline 4: Ensure the equitable, rational and efficient use of the radio frequency spectrum and the various orbital regions used by satellites;

(e) Guideline 12: Improve accuracy of orbital data on space objects and enhance the practice and utility of sharing orbital information on space objects;

(f) Guideline 13: Promote the collection, sharing and dissemination of space debris monitoring information;

(g) Guideline 16: Share operational space weather data and forecasts;

(h) Guideline 17: Develop space weather models and tools and collect established practices on the mitigation of space weather effects;

(i) Guideline 25: Promote and support capacity-building;

(j) Guideline 26: Raise awareness of space activities;

(k) Guideline 27: Promote and support research into and the development of ways to support sustainable exploration and use of outer space;

(l) Guideline 28: Investigate and consider new measures to manage the space debris population in the long term.

131. The Committee agreed that the preambular text, as described in para. 129 above, and the text of the following draft guidelines, as reflected in A/AC.105/2016/CRP.17, required further discussion:[1]

(a) Guideline 6: Enhance the practice of registering space objects;

(b) Guideline 7: Provide, in national legal and/or policy frameworks, for a commitment to conducting space activities solely for peaceful purposes;

(c) Guideline 8: Implement operational and technological measures of self-restraint to forestall adverse developments in outer space;

(d) Guideline 9: Implement policy aimed at precluding interference with the operation of foreign space objects through unauthorized access to their on-board hardware and software;

(e) Guideline 10: Refrain from intentional modifications of the natural space environment;

[1] The ideas contained in draft guideline 5 were assimilated into draft guideline 6; draft guideline 5 therefore no longer appears in the set of draft guidelines.

(f) Guideline 11: Provide contact information and exchange information on space objects and orbital events;

(g) Guideline 14: Perform conjunction assessment during all orbital phases of controlled flight;

(h) Guideline 15: Develop practical approaches for pre-launch assessment of possible conjunctions of newly launched space objects with space objects already present in near-Earth space;

(i) Guideline 18: Ensure the safety and security of terrestrial infrastructure that supports the operation of orbital systems and respect the security of foreign space-related terrestrial and information infrastructures;

(j) Guideline 19: Ensure the safety and security of terrestrial infrastructure that supports the operation of orbital systems;

(k) Guideline 20: Develop and implement criteria and procedures for the preparation and conduct of space activities aimed at the active removal of space objects from orbit;

(l) Guideline 21: Establish procedures and requirements for the safe conduct, in extreme cases, of operations resulting in the destruction of in-orbit space objects;

(m) Guideline 22: Develop criteria and procedures for the active removal of space objects and, under exceptional circumstances, for the intentional destruction of space objects, specifically as applied to non-registered objects;

(n) Guideline 23: Promote and facilitate international cooperation in support of the long-term sustainability of outer space activities;

(o) Guideline 24: Share experience related to the long-term sustainability of outer space activities and develop new procedures, as appropriate, for information exchange;

(p) Guideline 29: Establish normative and organizational frameworks for ensuring effective and sustained implementation of the guidelines and subsequent activity on their review and enhancement.

132. The Committee requested that the content of A/AC.105/2016/CRP.17 be made into a working paper, available in the six official languages of the United Nations, following the current session of the Committee.

133. The Committee agreed that the guidelines listed in paragraph 130 above constituted a first set of guidelines, on which negotiations had been carried out and concluded. The Committee also agreed to continue to discuss and consider the preambular text, as described in paragraph 129 above, and the draft guidelines listed in paragraph 131 above on a priority basis, with a view to developing a second set of guidelines, which would be brought together with the preambular text and the first set of guidelines to form a full compendium of guidelines to be adopted by the Committee and referred to the General Assembly in 2018 to coincide with UNISPACE+50. The Committee further agreed that, prior to such submission, it might be necessary to make minor editorial changes to all the guidelines with a view to having a harmonized compendium.

134. The Committee requested that the General Assembly note that the guidelines in the annex to the present report represented only a first set of guidelines, that a preambular text and a second set of guidelines would be completed, and that a full compendium of guidelines would be referred to the Assembly at its seventy-third session, in 2018.

135. The Committee noted that the first set of guidelines was now ready for States and international intergovernmental organizations to consider implementing on a voluntary basis.

136. The Committee agreed that it was important to develop a clear procedure for reviewing, amending and/or revising the guidelines. The Committee also agreed that the development of such a procedure should be considered by the Scientific and Technical Subcommittee under the agenda item on the long-term sustainability of outer space activities during its fifty-fourth session, in 2017, and, if necessary, at its fifty-fifth session, in 2018.

137. The Committee noted that, while the Working Group had made significant progress in its consideration of many of the guidelines, additional time was needed for the consideration of the remaining draft guidelines and for the subsequent compilation of the full compendium. In view of that, the Committee agreed to extend the mandate of the Working Group for a further two years. In that connection, the Committee agreed on the following programme of work for finalizing the report of the Working Group and the full compendium of guidelines:

2016 Hold an intersessional meeting to continue substantive discussions on the preambular text, as described in paragraph 129 of the report of the Committee on the Peaceful Uses of Outer Space at its fifty-ninth session (A/71/20), and the draft guidelines, as listed in paragraph 131 of A/71/20, on a priority basis; consider proposed guidelines contained in documents before the Working Group at the fifty-ninth session of the Committee; and consider proposals for the development of procedures for the review and amendment of agreed guidelines in the compendium and for the consideration of proposals for new guidelines in the future. The informal translation and terminology reference group will continue its work to address questions of translation and terminology in the guidelines and the report of the Working Group.

2017 Continue to consider the preambular text, as necessary, and the draft guidelines, with a view to finalizing them. Consider the draft report of the Working Group, including the topics recommended therein for further consideration by the Scientific and Technical Subcommittee. Continue to consider proposals for the development of procedures for the review and amendment of agreed guidelines and for the consideration of proposals for new guidelines in the future. Consider and agree on the manner in which the results of the Working Group will be presented to the General Assembly and begin to consider the elements to be contained in the appropriate instrument to refer the guidelines to the General Assembly. The informal translation and terminology reference group will continue its work to address questions of translation and terminology in the guidelines and the report of the Working Group, with a view to resolving all outstanding translation and terminology issues.

2018 Finalize the report of the Working Group and the second set of the guidelines during the fifty-fifth session of the Scientific and Technical Subcommittee, for presentation to and review by the Committee at its sixty-first session. Harmonize the two sets of guidelines to produce a compendium of guidelines, which will be preceded by a preambular text, as described in paragraph 129 of A/71/20, for adoption by the Committee and referral to the General Assembly at its seventy-third session. Finalize the instrument through which the compendium of guidelines will be referred to the General Assembly.

138. The Committee agreed that, in order to meet the objectives set out in the above workplan, the Working Group would meet during the fifty-fourth and fifty-fifth sessions of the Scientific and Technical Subcommittee and the sixtieth and sixty-first sessions of the Committee, making use of existing interpretation services, and would also take advantage of other opportunities to advance its work during the intersessional periods. In that connection, the Committee requested the Secretariat to prepare such documentation, in the six official languages of the United Nations, as was necessary to support the work of the Working Group.

11. Examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries, without prejudice to the role of the International Telecommunication Union

139. The Committee took note of the discussion of the Subcommittee under the item on the examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries, without prejudice to the role of ITU, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 249-257).

140. Some delegations expressed the view that the geostationary orbit was a limited natural resource that was at risk of becoming saturated, thereby threatening the sustainability of space activities in that environment; that its exploitation should be rationalized; and that it should be made available to all States, under equitable conditions, irrespective of their current technical capabilities, taking into particular account the needs of developing countries and the geographical position of certain countries. Those delegations were also of the view that it was important to use the geostationary orbit in compliance with international law, in accordance with the decisions of ITU and within the legal framework established in the relevant United Nations treaties.

141. Some delegations expressed the view that the geostationary orbit provided unique potential for access to communications and information, in particular for assisting developing countries in implementing social programmes and educational projects, in disseminating knowledge and in providing medical assistance. Those delegations therefore considered that, in order to ensure the sustainability of the geostationary orbit, it was necessary to keep the issue on the agenda of the Subcommittee.

12. Draft provisional agenda for the fifty-fourth session of the Scientific and Technical Subcommittee

142. The Committee took note of the discussion of the Subcommittee under the item on the draft provisional agenda for its fifty-fourth session, as reflected in the report of the Subcommittee (A/AC.105/1109, paras. 258-266).

143. The Committee endorsed the recommendations and decisions on the item made by the Subcommittee (A/AC.105/1109, paras. 259-263).

144. The Committee agreed that, in view of the adoption of the 2030 Agenda for Sustainable Development at the United Nations summit for the adoption of the post-2015 development agenda, held from 25 to 27 September 2015, the current agenda item of the Subcommittee entitled "Space technology for socioeconomic development in the context of the United Nations Conference on Sustainable Development and the post-2015 development agenda" should be renamed "Space technology for sustainable socioeconomic development".

145. On the basis of the deliberations of the Subcommittee at its fifty-third session, the Committee agreed that the following items should be considered by the Subcommittee at its fifty-fourth session:

1. Adoption of the agenda.
2. Statement by the Chair.
3. General exchange of views and introduction of reports submitted on national activities.
4. United Nations Programme on Space Applications.
5. Space technology for sustainable socioeconomic development.
6. Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment.
7. Space debris.
8. Space-system-based disaster management support.
9. Recent developments in global navigation satellite systems.
10. Space weather.
11. Near-Earth objects.
12. Use of nuclear power sources in outer space.

    (Work for 2017 as reflected in the extended multi-year workplan of the Working Group (A/AC.105/1065, annex II, para. 9))
13. Long-term sustainability of outer space activities.

    (Work for 2017 as reflected in the extended multi-year workplan of the Working Group (A/71/20, para. 137))
14. Examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications, as well as other questions relating to

developments in space communications, taking particular account of the needs and interests of developing countries, without prejudice to the role of the International Telecommunication Union.

(Single issue/item for discussion)

15. Draft provisional agenda for the fifty-fifth session of the Scientific and Technical Subcommittee, including identification of subjects to be dealt with as single issues/items for discussion or under multi-year workplans.

146. The Committee agreed that the Working Group of the Whole, the Working Group on the Use of Nuclear Power Sources in Outer Space and the Working Group on the Long-term Sustainability of Outer Space Activities should be reconvened at the fifty-fourth session of the Scientific and Technical Subcommittee.

147. The Committee agreed that the item on the long-term sustainability of outer space activities would be included in the agenda of the Subcommittee for its sessions in 2017 and 2018.

148. Some delegations expressed the view that the Subcommittee should introduce a new agenda item entitled "Space system-based counter-terrorism support" and that, in order to combat the threat of international terrorism, spacefaring nations should make available, at no cost, high-resolution imagery to countries with no such capabilities.

C. Report of the Legal Subcommittee on its fifty-fifth session

149. The Committee took note with appreciation of the report of the Legal Subcommittee on its fifty-fifth session (A/AC.105/1113), which contained the results of its deliberations on the items considered by the Subcommittee in accordance with General Assembly resolution 70/82.

150. The Committee expressed its appreciation to Hellmut Lagos Koller (Chile) for his able leadership during the fifty-fifth session of the Subcommittee.

151. The representatives of Austria, Canada, China, Germany, Indonesia, Japan, Mexico, Pakistan, the United States and Venezuela (Bolivarian Republic of) made statements under the item. Statements were also made by the representative of Argentina on behalf of the Group of 77 and China and the observer for the Dominican Republic on behalf of the Group of Latin American and Caribbean States. The observer for ITU also made a statement under the item. During the general exchange of views, statements relating to the item were also made by other member States.

152. Some delegations reiterated the need to strengthen interaction between the Scientific and Technical Subcommittee and the Legal Subcommittee in order to synchronize the progressive development of space law with key scientific and technical developments in that area. They also expressed the view that the results attained by the working groups established under the Scientific and Technical Subcommittee should be submitted officially to the Legal Subcommittee for analysis.

1. Information on the activities of international intergovernmental and non-governmental organizations relating to space law

153. The Committee took note of the discussion of the Subcommittee under the item on information on the activities of international intergovernmental and non-governmental organizations relating to space law, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 41-53).

154. The Committee noted with appreciation the important role of international intergovernmental and non-governmental organizations relating to space law in the development, strengthening and furtherance of understanding of international space law through, among others, the organization of conferences, symposiums and training seminars for practitioners and students and the issuance of publications and reports.

155. The Committee noted that it was important to continue to exchange information among the Subcommittee and international intergovernmental and non-governmental organizations on recent developments in the area of space law and endorsed the recommendation of the Subcommittee that such organizations should again be invited to report on their activities relating to space law to the Subcommittee at its fifty-sixth session.

2. Status and application of the five United Nations treaties on outer space

156. The Committee took note of the discussion of the Subcommittee under the item on the status and application of the five United Nations treaties on outer space, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 54-83).

157. The Committee endorsed the decisions and recommendations of the Subcommittee and its Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, which had been reconvened under the chairmanship of Bernhard Schmidt-Tedd (Germany) (A/AC.105/1113, para. 57, and annex I, paras. 17, 19, 21 and 22).

158. Some delegations expressed the view that the United Nations treaties on outer space formed the primary legal basis for supporting the increasing scale of space activities and for strengthening international cooperation on the peaceful uses of outer space. Those delegations welcomed the growing adherence to the treaties and encouraged those States that had not yet become parties to the treaties to consider doing so.

159. Some delegations expressed the view that the rule of law served as a fundamental guarantee for preserving outer space for peaceful purposes and ensuring the long-term sustainability of outer space activities. In carrying out their space activities, all States should act in accordance with the United Nations treaties on outer space and relevant principles and declarations.

160. Some delegations expressed the view that the Subcommittee should review, update and strengthen the five United Nations treaties on outer space for the purpose of invigorating the guiding principles of outer space activities, in particular those principles protecting its peaceful use, establish the responsibility of States in space activities carried out by both governmental and non-governmental entities and encourage international cooperation.

161. The view was expressed that, in view of recent scientific and technological developments, efforts should be made to deliberate on new legally binding instruments, with the aim of addressing legal issues arising as a result of emerging space activities.

3. Matters relating to the definition and delimitation of outer space and the character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of the International Telecommunication Union

162. The Committee took note of the discussion of the Subcommittee under the agenda item on matters relating to the definition and delimitation of outer space and the character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of ITU, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 84-111).

163. The Committee endorsed the recommendations of the Subcommittee and its Working Group on the Definition and Delimitation of Outer Space, reconvened under the chairmanship of José Monserrat Filho (Brazil) (A/AC.105/1113, para. 86, and annex II, para. 20).

164. Some delegations expressed the view that it was necessary to define and delimit outer space, given that there was a serious legal gap in that regard in both space law and air law. The delegations expressing that view considered that scientific and technological progress, the commercialization of outer space, the participation of the private sector, emerging legal questions and the increasing use of outer space in general had made it necessary for the Subcommittee to consider the question of the definition and delimitation of outer space. The delegations expressing that view were also of the view that the definition and delimitation of outer space would help to establish a single legal regime regulating the movement of an aerospace object and to bring about legal clarity in the implementation of space law and air law, as well as clarify the issues of the sovereignty and international responsibility of States and the boundary between airspace and outer space.

165. The view was expressed that an altitude of 110 km above sea level might be considered as the delimitation of outer space.

166. Some delegations expressed the view that there was no evidence to suggest that the lack of a definition or delimitation of outer space had hindered or restricted the growth of aviation or outer space exploration, and that no specific cases of a practical nature had been reported to the Subcommittee that could confirm that the lack of a definition of airspace or outer space had compromised aviation safety.

167. Some delegations expressed the view that the geostationary orbit was a limited natural resource with great potential for the implementation of a wide array of programmes for the benefit of all States, and that it was at risk of becoming saturated, thereby threatening the sustainability of space activities in it; that its exploitation should be rationalized; and that it should be made available to all States, under equitable conditions, taking into account in particular the needs of developing countries, and the geographical position of certain countries. Those

delegations were also of the view that it was important to use the geostationary orbit in compliance with international law, in accordance with decisions of ITU and within the legal framework established in the relevant United Nations treaties, while giving consideration to the contributions of space activities to sustainable development and the achievement of the 2030 Agenda for Sustainable Development.

168. Some delegations expressed the view that the utilization by States of the geostationary orbit on the basis of "first come, first served" was unacceptable and that the Subcommittee should therefore develop a legal regime guaranteeing equitable access to orbital positions for States in accordance with the principles of the peaceful use and non-appropriation of outer space.

169. The Committee noted the statement by the observer for ITU about the outcome of the fifteenth World Radiocommunication Conference. The Committee also noted that the final acts of the Conference were available to download, free of charge, from the ITU website (www.itu.int/pub/R-ACT-WRC.12-2015/en).

170. Some delegations expressed the view that, in order to ensure the sustainability of the geostationary orbit, it was necessary to keep that issue on the agenda of the Subcommittee and to explore it further, through the creation of appropriate working groups and legal and technical intergovernmental panels, as necessary. Those delegations were also of the view that working groups or intergovernmental panels with technical and legal expertise should be established to promote equal access to the geostationary orbit, and called for the greater participation of ITU in the work of the Subcommittee on those matters.

4. National legislation relevant to the peaceful exploration and use of outer space

171. The Committee took note of the discussion of the Legal Subcommittee under the item on national legislation relevant to the peaceful exploration and use of outer space, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 112-121).

172. The Committee agreed that the general exchange of information on national legislation relevant to the peaceful exploration and use of outer space provided States with a comprehensive overview of the current status of national space laws and regulations and assisted States in understanding the different approaches taken at the national level with regard to the development of national space-related regulatory frameworks. In that regard, the Committee greatly appreciated the continuously updated schematic overview of national regulatory frameworks available on the website of the Office for Outer Space Affairs.

173. Some delegations expressed the view that all States should ensure that their national legislation on the exploration and use of outer space was closely aligned with the relevant international treaties. Those delegations were also of the view that the promotion of laws and regulations relating to the commercialization of outer space should be avoided.

174. Some delegations expressed the view that, in the light of the growing interest among spacefaring nations in new missions aimed at exploring and using the Moon and other celestial bodies, there was a strong need to further develop a common understanding of the principles set forth in the Outer Space Treaty, in particular the principles regarding the freedom of exploration and use of outer space, the principle

of non-appropriation of outer space and the principle that the exploration and use of outer space should be for the benefit and interests of all humanity.

175. The view was expressed that national legislation intending to regulate commercial activities in outer space, the Moon or other celestial bodies must be interpreted and executed within the meaning and spirit of States' obligations under international law.

5. Capacity-building in space law

176. The Committee took note of the discussion of the Subcommittee under the item on capacity-building in space law, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 122-137).

177. The Committee endorsed the recommendation of the Subcommittee on the agenda item (A/AC.105/1113, para. 137).

178. The Committee agreed that international cooperation in research, training and education in space law was essential to build the capacity necessary at the national level to ensure that the ever-increasing number and type of players in space activities remained in compliance with international space law.

179. The Committee reaffirmed that the regional centres for space science and technology education, affiliated to the United Nations, played an important role in providing teaching and training opportunities in space law. The Committee noted that greater use of the regional centres could be made in order to provide more opportunities for academic linkages with other institutes and universities, as appropriate.

180. Some delegations expressed the view that more effective and proactive efforts were needed to increase awareness of the importance of complying with international space law when carrying out space activities and programmes. Those delegations were also of the view that capacity-building in space law was a fundamental tool that should be enhanced through greater international cooperation among States and an increased number of workshops, seminars and events to promote space law, especially in developing countries.

181. The Committee noted with appreciation that the tenth United Nations workshop on space law would be held in Vienna from 5 to 8 September 2016, organized by the Office for Outer Space Affairs.

6. Review and possible revision of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space

182. The Committee took note of the discussion of the Subcommittee under the item on the review and possible revision of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 138-154).

183. Some delegations expressed the view that it was exclusively States, irrespective of their level of social, economic, scientific or technical development, that had an obligation to engage in regulatory activity associated with the use of nuclear power sources in outer space and to adapt national legislation to relevant international standards. Those delegations were also of the view that Governments

bore international responsibility for national activities involving the use of nuclear power sources in outer space conducted by governmental and non-governmental organizations and that such activities must be beneficial, not detrimental, to humanity.

184. Some delegations called on the Legal Subcommittee to undertake a legal review of the Safety Framework for Nuclear Power Source Applications in Outer Space and to promote binding standards, with a view to ensuring the responsible use of nuclear power sources.

185. Some delegations expressed the view that there should be greater coordination and interaction between the Scientific and Technical Subcommittee and the Legal Subcommittee in order to promote greater understanding, acceptance and implementation of the legal instruments and the development of new legal instruments related to the use of nuclear power sources in outer space.

186. Some delegations expressed the view that more consideration should be given to the use of nuclear power sources in outer space, specifically in the geostationary orbit and low-Earth atmosphere, in order to address the legal aspects of the problems of potential collisions of nuclear-powered space objects in orbit and of the incidents or emergencies that could be created by the accidental re-entry of such objects into the Earth's atmosphere, as well as the impact of such a re-entry on the Earth's surface, human life and health and the ecosystem.

187. The view was expressed that the Principles Relevant to the Use of Nuclear Power Sources in Outer Space should be reviewed, taking into account the latest developments in technology. The delegation expressing that view was also of the view that the use of nuclear energy as a source of fuel was permissible if environmental protection had been ensured in space and on the ground.

7. General exchange of information and views on legal mechanisms relating to space debris mitigation measures, taking into account the work of the Scientific and Technical Subcommittee

188. The Committee took note of the discussion of the Legal Subcommittee under the item on the general exchange of information and views on legal mechanisms relating to space debris mitigation measures, taking into account the work of the Scientific and Technical Subcommittee, as reflected in the report of the Legal Subcommittee (A/AC.105/1113, paras. 155-187).

189. The Committee endorsed the decisions of the Subcommittee as contained in its report (A/AC.105/1113, para. 187).

190. The Committee noted the increasing amount of space debris, noted with satisfaction that the endorsement by the General Assembly, in its resolution 62/217, of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space[2] was a key step in providing all spacefaring nations with guidance on how to mitigate the problem of space debris, and urged Member States to consider voluntary implementation of the Guidelines.

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[2] *Official Records of the General Assembly, Sixty-second Session, Supplement No. 20* (A/62/20), paras. 117 and 118 and annex.

191. The Committee noted with satisfaction that some States had taken measures to enforce the implementation of internationally recognized guidelines and standards relating to space debris through relevant provisions in their national legislation.

192. The Committee expressed its satisfaction with the compendium of space debris mitigation standards being maintained on a dedicated web page of the website of the Office for Outer Space Affairs and agreed that States members of the Committee and international intergovernmental organizations having permanent observer status with the Committee should be invited to further contribute to the compendium of space debris mitigation standards adopted by States and international organizations by providing or updating the information on any such legislation or standards adopted, using the template provided for that purpose. The Committee also agreed that all other States Members of the United Nations should be invited to contribute to the compendium and encouraged States with such regulations or standards to provide information on them.

193. Some delegations expressed the view that it was necessary to strengthen the interaction between the Scientific and Technical Subcommittee and the Legal Subcommittee in order to synchronize the progressive development of space law with major progress in space science and technology, and that outcomes of the work of the working groups of the Scientific and Technical Subcommittee, in particular the Space Debris Mitigation Guidelines of the Committee, should be officially presented to the Legal Subcommittee for legal analysis regarding compliance with principles on outer space.

194. Some delegations expressed the view that interaction and coordination between the Scientific and Technical Subcommittee and the Legal Subcommittee were essential for ensuring a comprehensive discussion of different aspects related to space debris, and that those aspects should be considered to be complementary.

195. The view was expressed that the Legal Subcommittee could work with the Scientific and Technical Subcommittee to consider existing guidelines from different sources relating to space debris in order to ensure their consistency and completeness. The delegation expressing that view was also of the view that the development of the Space Debris Mitigation Guidelines of the Committee into a legally binding instrument or the development of guidelines for active space debris removal would be premature at the current time because the technology was not at an advanced enough stage.

8. General exchange of information on non-legally binding United Nations instruments on outer space

196. The Committee took note of the discussion of the Subcommittee under the item on the general exchange of information on non-legally binding United Nations instruments on outer space, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 188-202).

197. The Committee noted with appreciation that the Subcommittee, at its fifty-fifth session, had had before it a compendium containing responses from States on mechanisms adopted in relation to non-legally binding United Nations instruments on outer space (A/AC.105/C.2/2016/CRP.13) and an updated questionnaire on the general exchange of information on non-legally binding United Nations instruments on outer space (A/AC.105/C.2/2016/CRP.12), which contained

two templates for collecting information on the mechanisms adopted to implement the non-legally binding United Nations instruments, one for States members of the Committee and the other for international organizations. Both the compendium and the questionnaire had been prepared by the delegation of Japan.

198. The Committee noted that the compendium was a valuable document that had facilitated the exchange of views and the sharing of information on the implementation of non-legally binding United Nations instruments.

199. The Committee endorsed the request by the Subcommittee that the Secretariat make the compendium available on a dedicated page of the website of the Office for Outer Space Affairs and invite States members of the Committee and international intergovernmental organizations having permanent observer status with the Committee to submit their responses to the Secretariat for inclusion in the compendium.

200. Some delegations expressed the view that non-legally binding United Nations instruments related to space activities were important instruments that provided guidance to States and other relevant actors on conducting their activities in a safe and secure manner. Those delegations were of the view that, although such instruments played an important role in complementing and supporting the United Nations treaties on outer space, they could not serve as a substitute for existing legally binding instruments, nor should they hinder the progressive development of international space law.

9. General exchange of views on the legal aspects of space traffic management

201. The Committee took note of the discussion of the Subcommittee under the item on the general exchange of views on the legal aspects of space traffic management, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 203-216), and of the fact that the Subcommittee had noted that consideration of the concept of space traffic management was of growing importance for all nations and had agreed on the importance of a continued discussion on space traffic management in the framework of the Committee and its Subcommittees.

202. The view was expressed that consideration of space traffic management was of growing importance because of a number of factors, including the increase in space activities, the diversification of space actors and the increasing congestion of space, as well as new industrial initiatives, such as the planned satellite megaconstellations.

203. The view was expressed that some regulations relevant to space traffic management already existed in international space law; however, many areas indispensable for the effective management of space traffic were not covered by the existing international regulatory framework and ought to be addressed, in order to enhance the safe and sustainable conduct of activities in outer space.

10. General exchange of views on the application of international law to small satellite activities

204. The Committee took note of the discussion of the Legal Subcommittee under the item on the general exchange of views on the application of international law to

small satellite activities, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 217-231).

205. The Committee noted with satisfaction the inclusion of the new item on the agenda of the Legal Subcommittee and agreed that it would provide valuable opportunities for addressing a number of topical issues relating to international and national policy and regulation measures regarding the use of small satellites by various actors.

206. Some delegations expressed the view that, in order to ensure the safe and responsible use of outer space in the future, it was important to include small satellite missions, as appropriate, in the scope of application of international and national regulatory frameworks.

207. The Committee noted that the Secretariat was continuing to prepare a questionnaire, to be addressed to States members and permanent observers of the Committee, containing a set of questions addressing the practice of the development and use of small satellites, as well as policy and legal aspects of their use. The Committee noted that the draft questionnaire would be presented to the Subcommittee at its fifty-sixth session, in 2017.

11. Review of international mechanisms for cooperation in the peaceful exploration and use of outer space

208. The Committee took note of the discussion of the Legal Subcommittee under the item on the review of international mechanisms for cooperation in the peaceful exploration and use of outer space, in accordance with its five-year workplan, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 232-246).

209. The Committee endorsed the decisions and recommendations of the Subcommittee and its Working Group on the Review of International Mechanisms for Cooperation in the Peaceful Exploration and Use of Outer Space, which had been reconvened by the Subcommittee at its fifty-fifth session, under the chairmanship of Setsuko Aoki (Japan) (A/AC.105/1113, para. 234, and annex III, paras. 9 and 10).

210. The Committee noted the many examples of international mechanisms for cooperation that had been discussed, ranging from bilateral and multilateral binding agreements to regional and interregional cooperation and coordination mechanisms. The Committee also noted that States had presented lessons learned in the form of case studies reflecting various reasons for selecting cooperative mechanisms to reach intended goals. The Committee was of the opinion that the case studies would lead to a better understanding of the different approaches taken by States and international organizations to cooperation in space activities.

12. Draft provisional agenda for the fifty-sixth session of the Legal Subcommittee

211. The Committee took note of the discussion of the Subcommittee under the item on proposals to the Committee for new items to be considered by the Legal Subcommittee at its fifty-sixth session, as reflected in the report of the Subcommittee (A/AC.105/1113, paras. 247-263).

212. On the basis of the deliberations of the Legal Subcommittee at its fifty-fifth session, the Committee agreed that the following substantive items should be considered by the Subcommittee at its fifty-sixth session:

Regular items

1. Adoption of the agenda.
2. Statement by the Chair.
3. General exchange of views.
4. Information on the activities of international intergovernmental and non-governmental organizations relating to space law.
5. Status and application of the five United Nations treaties on outer space.
6. Matters relating to:
   (a) The definition and delimitation of outer space;
   (b) The character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of the International Telecommunication Union.
7. National legislation relevant to the peaceful exploration and use of outer space.
8. Capacity-building in space law.

Single issues/items for discussion

9. Review and possible revision of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space.
10. General exchange of information and views on legal mechanisms relating to space debris mitigation measures, taking into account the work of the Scientific and Technical Subcommittee.
11. General exchange of information on non-legally binding United Nations instruments on outer space.
12. General exchange of views on the legal aspects of space traffic management.
13. General exchange of views on the application of international law to small satellite activities.
14. General exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resources.

Items considered under workplans

15. Review of international mechanisms for cooperation in the peaceful exploration and use of outer space.

(Work for 2017 as reflected in the multi-year workplan in the report of the Legal Subcommittee on its fifty-first session (A/AC.105/1003, para. 179))

New items

16. Proposals to the Committee on the Peaceful Uses of Outer Space for new items to be considered by the Legal Subcommittee at its fifty-seventh session.

213. The Committee agreed that the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, the Working Group on the Definition and Delimitation of Outer Space and the Working Group on the Review of International Mechanisms for Cooperation in the Peaceful Exploration and Use of Outer Space should be reconvened at the fifty-sixth session of the Legal Subcommittee.

214. The Committee endorsed the agreement reached by the Subcommittee that the International Institute of Space Law and the European Centre for Space Law should again be invited to organize a symposium, to be held during the fifty-sixth session of the Subcommittee, taking into account the need for equitable geographical and gender representation in the symposium, and that the symposium should be dedicated to the fiftieth anniversary of the Outer Space Treaty (A/AC.105/1113, annex I, para. 19 (a)).

215. The Committee commended the Subcommittee for introducing three new agenda items, namely space traffic management, small satellites, and potential legal models for activities in exploration, exploitation and utilization of space resources, which would allow for a better understanding of the challenges posed by the evolution of space, space technologies and space activities. Further, the Committee welcomed the preparation of a questionnaire, to be addressed to States members and permanent observers of the Committee, containing a set of questions addressing the practice of the development and use of small satellites, as well as policy and legal aspects of their use.

D. Space and sustainable development

216. The Committee considered the agenda item entitled "Space and sustainable development", in accordance with General Assembly resolution 70/82.

217. The representatives of Brazil, Chile, Egypt, El Salvador, Germany, India, Indonesia, Italy, Japan, Mexico, Pakistan, Poland, Portugal, South Africa and the United States made statements under the item. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

218. The Committee heard the following presentations under the item:

(a) "The progress of the BeiDou Navigation Satellite System", by the representative of China;

(b) "Sustainable development in Egypt", by the representative of Egypt;

(c) "Supporting disaster management and enhancing cooperation through APRSAF: Sentinel Asia", by the representative of Japan;

(d) "NavIC Indian Regional Navigation Satellite System", by the representative of India;

(e) "Space for sustainable development", by the observer for the European Space Policy Institute.

219. The Committee welcomed the adoption of the three global development frameworks in 2015: the 2030 Agenda for Sustainable Development, including the Sustainable Development Goals, at the United Nations summit for the adoption of the post-2015 development agenda; the Sendai Framework for Disaster Risk Reduction 2015-2030, at the third United Nations World Conference on Disaster Risk Reduction; and the Paris Agreement, at the twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change.

220. The Committee noted the adoption of the African Space Policy and Strategy by the African Union Heads of State and Government during the twenty-sixth ordinary session of the African Union, which had laid the first steps towards the realization of an African outer space programme, within the framework of the African Union's Agenda 2063.

221. The Committee noted the significant role that space science and technology applications could play in the implementation of internationally agreed frameworks. The Committee also noted the value of space technology and applications and space-derived data and information in contributing to sustainable development, including by improving the formulation and subsequent implementation of policies and programmes of action in connection with environmental protection, land and water management, marine and coastal ecosystems, health care, climate change, disaster risk reduction and emergency response, energy, navigation, seismic monitoring, natural resources management, glaciers, biodiversity, agriculture and food security.

222. The Committee took note of the information provided by States on their actions and programmes aimed at increasing awareness and understanding in society of the applications of space science and technology for meeting development needs.

223. The Committee noted the continued role played by the International Space Station in education and outreach to educational communities worldwide.

224. The Committee noted with satisfaction the large number of outreach activities carried out at the regional level for building capacity through education and training in using space science and technology applications for sustainable development. The Committee noted with appreciation the role played in space-related education by the regional centres for space science and technology education, affiliated to the United Nations.

225. Some delegations expressed the view that it was essential to promote international cooperation and strengthen intraregional cooperation, exchange expertise and best practices and build capacity at the national and regional levels, as international and regional cooperation in the field of space activities could generate

synergies and create awareness of the benefits that space science and technology provided for sustainable development.

226. Some delegations expressed the view that it was important to increase the equality of access to the benefits of space technology and its applications to help achieve the 2030 Agenda.

227. Some delegations expressed the view that it was necessary to promote equal, non-discriminatory access to outer space, irrespective of levels of social, economic or scientific development.

228. The view was expressed that it was important to consider how the Committee could further contribute to accomplishing the Sustainable Development Goals and their targets through its expertise in space applications.

229. The view was expressed that it was important to build human resource capacities to exploit the potential of Earth observation data for sustainable development.

230. The view was expressed that the international community should enhance mutual partnerships and continue to provide technical assistance to Member States, in particular developing countries, including by providing adequate resources for, transferring knowledge about and building capacity in space technology.

E. Spin-off benefits of space technology: review of current status

231. The Committee considered the agenda item entitled "Spin-off benefits of space technology: review of current status", in accordance with General Assembly resolution 70/82.

232. The representatives of India, Pakistan, the Sudan and the United States made statements under the item.

233. The Committee heard a presentation entitled "Crowdsourcing new business ideas from space technology: the LIVE Glacier Case in the NASA Apps Challenge", by the representative of Italy.

234. The Committee took note of the information provided by States on their national practices regarding spin-offs from space technology that had resulted in the introduction of strategies for the management of regional economic development. It also took note of innovations in numerous scientific areas, such as medicine, dentistry, biology, chemistry and materials sciences. It further took note of practical applications in civil society, such as the use of enhanced robotics in medicine and of colour photometry to monitor water levels for the benefit of agriculture, and the use of enhanced technologies to reduce energy consumption, improve techniques in lubrication, cutting and drilling, and to facilitate resource exploration, infrastructure improvements, firefighting, geographical positioning, navigation and the tracking of search and rescue personnel.

235. The Committee agreed that spin-offs from space technology constituted a powerful engine for technological innovation and growth in both the industrial and the service sectors and that spin-offs had helped to improve public service delivery through modern communications infrastructure and to open new avenues of

scientific and technological innovations and had allowed for sustainable growth in the global space industry. It also agreed that spin-offs could be applied to achieve social and economic objectives and the Sustainable Development Goals.

236. The Committee noted that Governments had continued to develop national policies directed specifically at disseminating space technologies and actively promoting spin-offs by streamlining licensing and procedures to protect intellectual property to facilitate and support the market entry of products derived from space technology by start-up companies.

237. The Committee noted that Governments had successfully involved the private sector and academia in various projects in which spin-offs from space technology were put to use.

238. The view was expressed that the sanctions imposed by some developed countries on certain developing countries had a negative impact on the development and progress of the scientific and technical sectors of those countries, including their outer space sectors.

239. The Committee agreed that the use of spin-offs from space technology should be further promoted because such spin-offs had fostered the development of innovative technologies in other sectors, thus advancing national economies and contributing to a better quality of life.

240. The Committee noted with interest the publication *Spinoff 2016*, which had been made available by the National Aeronautics and Space Administration (NASA).

F. Space and water

241. The Committee considered the agenda item entitled "Space and water", in accordance with General Assembly resolution 70/82.

242. The representatives of Egypt, India, Indonesia, Japan, Mexico and Pakistan made statements under the item. A statement was also made by the observer for the Prince Sultan bin Abdulaziz International Prize for Water. During the general exchange of views, statements relating to the item were also made by other member States.

243. In the course of the discussion, delegations reviewed water-related cooperation activities, giving examples of national programmes and bilateral, regional and international cooperation.

244. The Committee noted that water and the issues related to it were becoming one of the most critical environmental problems facing humankind, often with political implications, and that the conservation and proper utilization of existing water resources were of paramount importance for sustaining life on Earth. In that connection, space-derived data could support policymakers in making informed decisions on water resources management.

245. The Committee noted that a large number of space-borne platforms addressed water-related issues and that space-derived data were used extensively in water management. The Committee also noted that space technology and applications,

combined with non-space technologies, played an important role in addressing many water-related issues, including the observation and study of global water cycles and unusual climate patterns, the mapping of water courses, the rehabilitation of water systems, the monitoring of glaciers, the estimation of snowmelt run-offs, the planning and management of reservoirs and irrigation projects, the monitoring and mitigation of the effects of floods, droughts and cyclones and the improvement of the timeliness and accuracy of forecasts.

246. The Committee noted that the Asian Water Cycle Initiative, an endeavour by the Group on Earth Observations, had continued developing an information system of systems to promote the implementation of integrated water resources management in 20 Asian countries through the integration and sharing of data as a basis for decision-making with regard to national water policies.

247. The view was expressed that it was imperative to facilitate greater knowledge-sharing and satellite data-sharing, and that stronger collaboration was needed between scientists and the space industry for the design, development and availability of Earth observation sensors that would fully meet end-user requirements.

G. Space and climate change

248. The Committee considered the agenda item entitled "Space and climate change", in accordance with General Assembly resolution 70/82.

249. The representatives of Chile, Egypt, India, Indonesia, Japan, Mexico, Pakistan and the United States made statements under the item. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

250. The Committee heard a presentation entitled "Future space-borne observation of climate change processes", by the representative of Germany.

251. The Committee noted with appreciation the commitment made by the global community to tackle climate change, as one of the most pressing issues for humankind and Earth, through the adoption of the Paris Agreement. It also noted with appreciation the increasing recognition of the importance of space-based technology in providing critical climate data that could be used to understand and mitigate climate change and to monitor the implementation of the Paris Agreement.

252. In that regard, the Committee noted with appreciation that the declaration signed at the Heads of Space Agencies Summit on Climate Change and Disaster Management held in Mexico City on 18 September 2015 and organized by the International Academy of Astronautics and the Mexican Space Agency had been submitted to the twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change. In the declaration, the heads of space agencies expressed their determination to enhance their efforts to strengthen the role of space in climate change studies and disaster management in support of political decisions taken at the sessions of the Conference of the Parties.

253. The Committee also noted with appreciation that, as a follow-up to the Paris Agreement and under the impetus of the Indian Space Research Organisation and

the French Space Agency (CNES), the space agencies of more than 60 countries had adopted the New Delhi Declaration on 3 April 2016, in which they agreed to work together to contribute to combating global warming and monitoring human-induced greenhouse gas emissions.

254. The Committee noted that Morocco would host the twenty-second session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, which would be held from 7 to 18 November 2016 in Marrakech.

255. The Committee also noted the importance of international cooperation in tackling climate change among actors in the space arena, since space-derived data, together with ground-based observations, provided an integrated perspective on the changing environment of the Earth and no single nation had the scientific or financial resources to independently design, launch and operate every Earth-observation satellite system crucial for gaining an understanding of the implications of global climate change for humankind.

256. In that regard, the Committee underscored the importance of bilateral and multilateral partnerships in activities related to climate change and in the area of Earth observation, such as the efforts undertaken by the World Meteorological Organization, the Committee on Earth Observation Satellites, the Group on Earth Observations and the Global Earth Observation System of Systems.

257. The Committee also noted the importance of global initiatives aimed at providing support to combating climate change through the use of space tools, such as the Global Climate Observing System, the Global Agriculture Geo-Monitoring Initiative, the Global Forest Observations Initiative and the Coordination Group for Meteorological Satellites, through activities of the Intergovernmental Panel on Climate Change, under the mechanisms of the United Nations Framework Convention on Climate Change and the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries and under the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, among others.

258. The Committee further noted that many States placed high priority on building, launching and operating Earth-observation satellite systems to track the manifestations and effects of climate change and the continued readiness on the part of spacefaring nations to share Earth observation data freely and openly.

259. The view was expressed that the full scope of climate research should include long-term surface-based (ground and/or sea) observations to complement, validate and enhance satellite data and that all members of the Committee could contribute to those datasets and implement open and transparent data-sharing policies.

260. The view was expressed that, although the crucial role of satellite-based global weather and climate observation data for observing climate change, mitigating its causes and adapting to its consequences had been recognized, more attention should be devoted to promoting the use of space applications for adaptation to climate change, in order to minimize its adverse impacts. The delegation expressing that view also expressed the view that long-term regional and global datasets of Earth observation systems were essential for climate research and that there was a need

for coordinated planning, production, improvement and availability of space-based data records on a global scale.

261. The view was expressed that introducing open data-sharing policies was a way to facilitate access to data generated by many satellites. Access to such data would facilitate their use in understanding and modelling the manifestations of climate change and its effects worldwide.

262. The Committee noted with appreciation that the Conference on Climate Change 2016, organized by the German Aerospace Centre (DLR), in cooperation with the Office for Outer Space Affairs, had been held from 5 to 7 April 2016 in Cologne, Germany. At that conference, the need for an integrated Earth-observation system to better understand climate-related issues and to secure compliance with international agreements, such as those formulated at the twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, had been emphasized.

263. Some delegations expressed the view that joint efforts were necessary to be able to contain the rise of the global temperature to below 2 degrees Celsius by using clean and renewable energy sources, such as solar and wind energy, pointing to the severe effects of climate change across countries with regard to changes in the rain cycle that negatively impacted irrigation and consequently crop production and the quality of soil, saline intrusion in coastal areas and the negative impacts of the El Niño Southern Oscillation phenomenon, which caused severe drought in affected areas. All those climate change-induced factors also had negative socioeconomic consequences, causing increased migration, lack of employment opportunities in affected areas and degradation of the standard of living of the population.

H. Use of space technology in the United Nations system

264. The Committee considered the agenda item entitled "Use of space technology in the United Nations system", in accordance with General Assembly resolution 70/82.

265. The representatives of India, Mexico, Pakistan and Switzerland made statements under the item. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

266. The Committee heard the following presentations under the item:

(a) "IKUNS: a university nanosatellite in support of Italian-Kenyan cooperation in space activities", by the representative of Italy;

(b) "Proposal to create an office for outreach activities on the UNOOSA platform", by the representative of Costa Rica.

267. The Committee had before it the report of UN-Space on its thirty-fifth and thirty-sixth sessions (A/AC.105/1114).

268. The Director of the Office for Outer Space Affairs, in her capacity as the Chair of UN-Space, made a statement informing the Committee about the outcome of the thirty-sixth session of UN-Space, held in New York on 3 March 2016, which had

been hosted by the Office for Outer Space Affairs and the Office for Disarmament Affairs.

269. The Committee welcomed with appreciation the report of the Secretary-General entitled "Coordination of space-related activities within the United Nations system: directions and anticipated results for the period 2016-2017 — meeting the 2030 Agenda for Sustainable Development" (A/AC.105/1115). The Committee noted the instrumental role of the report in assisting the Committee in its preparations for UNISPACE+50 by providing an overview of efforts by United Nations entities with regard to the peaceful uses of outer space.

270. The Committee noted with appreciation the publication of "Space for agriculture development and food security: use of space technology within the United Nations system" (ST/SPACE/69), which had been prepared by the Office for Outer Space Affairs and made available on its website.

271. The Committee took note of the special report by the Inter-Agency Meeting on Outer Space Activities on the implementation of the report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities as pertaining to the United Nations system entitled "Role of United Nations entities in supporting Member States in the implementation of transparency and confidence-building measures in outer space activities" (A/AC.105/1116).

272. The Committee agreed that States members of the Committee should be invited to submit their views on transparency and confidence-building measures in outer space activities, on the report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities (A/68/189) and on document A/AC.105/1116 to the sixtieth session of the Committee, in 2017, and that those matters should be addressed under the item on ways and means of maintaining outer space for peaceful purposes.

273. The Committee endorsed the recommendation made by the Legal Subcommittee at its fifty-fifth session that a joint half-day panel discussion by the First and Fourth Committees of the General Assembly be held in a plenary meeting during the seventy-second session of the Assembly, in 2017 (see A/AC.105/1113, para. 57, and annex I, para 19 (c)).

274. The Committee noted that, in his statement to the Committee, the United Nations High Representative for Disarmament Affairs, Kim Won-Soo, had stated that close collaboration between the Office for Outer Space Affairs and the Office for Disarmament Affairs would yield positive results for Member States in their pursuit of the effective implementation of transparency and confidence-building measures in outer space activities.

275. The Committee also noted the cooperative efforts between Member States and United Nations entities to promote the use of space technology to resolve global issues, including in drought and desertification monitoring and in disaster management and risk reduction.

276. The Committee further noted that the Office for Outer Space Affairs, in its capacity as the secretariat of UN-Space, would issue, for consideration by the Committee at its sixtieth session, a special report by UN-Space on space weather in the context of the preparations for UNISPACE+50, and would coordinate with the relevant United Nations entities in the preparation of that report.

277. The Committee noted that the Office for Outer Space Affairs, in its capacity as the secretariat of UN-Space, would identify, in the intersessional period, the host for the thirty-seventh session of UN-Space. The Committee noted that an open, informal session, to be organized in conjunction with the thirty-seventh session of UN-Space, could focus on the topic of space weather.

278. The Committee agreed that, if it were not possible to hold the thirty-seventh session of UN-Space before the holding of the sixtieth session of the Committee, in 2017, the report on the thirty-seventh session of UN-Space should be made available to the Committee at its session in 2018.

279. The Committee requested the Office for Outer Space Affairs to further promote, through United Nations entities, the increased practical application of space science and technology for development, in view of the catalytic role that such application could play for the implementation of the 2030 Agenda for Sustainable Development.

280. The view was expressed that United Nations entities should actively participate in the series of international workshops to be organized by the Office for Outer Space Affairs and should present specific plans and goals that could involve international participation by Governments, academia and the private sector, which could strengthen the implementation of future decisions made as part of UNISPACE+50.

281. The view was expressed that the joint meeting of the First Committee and Fourth Committee of the General Assembly should offer the opportunity for a focused dialogue with a view to achieving a tangible outcome.

I. Future role of the Committee

282. The Committee considered the agenda item entitled "Future role of the Committee", in accordance with General Assembly resolution 70/82.

283. The representatives of China, Egypt, Japan and Venezuela (Bolivarian Republic of) made statements under the item. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

284. The Committee agreed that it served, together with its two Subcommittees, as a unique common platform for promoting international cooperation in the peaceful uses and exploration of outer space on a global scale, facilitating rule of law in outer space and capacity-building in space technology and its applications, for the benefit of all nations, in particular developing countries.

285. The view was expressed that UNISPACE+50 was a unique opportunity for the Committee to formulate, through the UNISPACE+50 thematic priorities, its forward-looking agenda and to further strengthen its two main pillars of work (promoting international cooperation and strengthening the rule of law in outer space), as well as to ensure the coordination of the work of the Committee and its subsidiary bodies to avoid duplications, in view of the need for enhanced common outputs of the Committee as a whole.

286. The view was expressed that UNISPACE+50 was also an opportunity for the Committee, as the only guiding body dealing with the promotion of international cooperation in the peaceful use and exploration of outer space, to build synergies and strengthen its cooperation with other United Nations entities, such as the Conference on Disarmament, so that the cross-cutting issues pertaining to the peaceful uses of outer space and disarmament could be addressed in a balanced and comprehensive way.

287. The view was expressed that the Committee should continue to focus its future activities on the following three pillars, as identified in the discussion paper submitted by the Chair of the Committee for the period 2012-2013 entitled "Next phase in global governance for space research and utilization" (A/AC.105/2012/CRP.4): (a) promoting its role and that of its Subcommittees as a unique platform at the global level for international cooperation in space research and long-term space utilization; (b) promoting greater dialogue and cooperation between the Committee and regional and interregional cooperation mechanisms; and (c) strengthening the relevance of space science and technology and their applications for the benefit of humankind. Those pillars were particularly important for the attainment of the Sustainable Development Goals and the goals set forth in the Sendai Framework for Disaster Risk Reduction 2015-2030 and in the Paris Agreement.

288. The view was expressed that the ongoing discussion on the long-term sustainability of outer space activities was of crucial importance in view of the diversification and increase of actors in space activities, both governmental and non-governmental. That delegation was of the view that the Committee should reaffirm its significance in that regard as an effective international forum for proposing solutions in a timely manner.

289. The view was expressed that the Committee should continue to strengthen its efforts to facilitate the utilization of space technology by developing countries through promoting enhanced capacity-building activities and enabling technology transfers, as well as through eliminating technology embargos to deepen international cooperation, with a clear focus on the needs of developing countries.

J. Other matters

290. The Committee considered the agenda item entitled "Other matters", in accordance with General Assembly resolution 70/82.

291. The representatives of Algeria, Austria, Brazil, Canada, Chile, China, Egypt, France, Germany, Hungary, Iran (Islamic Republic of), Italy, Lebanon, Luxembourg, Mexico, Oman, Poland, Portugal, Romania, the Russian Federation, Saudi Arabia, South Africa, the Sudan, Switzerland, Tunisia, the United Kingdom, the United States and Venezuela (Bolivarian Republic of) made statements under the item. Statements were also made under the item by the representative of Morocco on behalf of the League of Arab States, and by the representative of Luxembourg on behalf of the Group of Western European and other States. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

1. Fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space

292. The Committee had before it the following:

(a) Note by the Secretariat entitled "Fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space: theme of the sessions of the Committee on the Peaceful Uses of Outer Space, its Scientific and Technical Subcommittee and its Legal Subcommittee in 2018" (A/AC.105/L.297);

(b) Conference room paper entitled "UNISPACE+50: thematic priorities and the way ahead towards 2018" (A/AC.105/2016/CRP.3);

(c) Conference room paper entitled "Fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space: the Committee on the Peaceful Uses of Outer Space and global space governance" (A/AC.105/2016/CRP.4);

(d) Proposal by Italy entitled "'Open Universe' proposal, an initiative under the auspices of the Committee on the Peaceful Uses of Outer Space for expanding availability of and accessibility to open source space science data" (A/AC.105/2016/CRP.6);

(e) Statement by the Director of the Office for Outer Space Affairs on behalf of the UNISPACE+50 Steering Committee.

293. At the 711th meeting, on 10 June 2016, the Director of the Office for Outer Space Affairs, in her capacity as Chair of the UNISPACE+50 Steering Committee, informed the Committee about the status of preparations for UNISPACE+50, in 2018, recalling that the General Assembly, in its resolution 70/82, had welcomed the fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space, to be commemorated in 2018, as an opportunity to consider the current status and chart the future of the contribution of the Committee to global space governance, and for which the Committee and its subsidiary bodies had set in motion the preparatory work for their thematic sessions in 2018. She stressed the importance of the Committee agreeing on a set of thematic priorities at its current session, in accordance with the plan of work endorsed by the Committee at its fifty-eighth session, in 2015 (A/AC.105/L.297), in order to allow for timely and efficient preparations for UNISPACE+50 by the Committee, its subsidiary bodies and the Office for Outer Space Affairs.

294. The Committee noted the progress of work by the UNISPACE+50 Steering Committee, which, since its establishment by the Committee at its fifty-eighth session, in 2015, had held four meetings to address both organizational and substantive matters related to UNISPACE+50, and also noted that UNISPACE+50 represented a unique opportunity to articulate a long-term vision for space. The Committee further noted that the UNISPACE+50 Steering Committee had adopted its terms of reference, which had been made available to the Committee in the annex to the statement by the Director of the Office for Outer Space Affairs on behalf of the UNISPACE+50 Steering Committee.

295. The Committee took note of A/AC.105/2016/CRP.3, prepared by the Secretariat in accordance with the above-mentioned plan of work of UNISPACE+50

(contained in A/AC.105/L.297) and as mandated by the Legal Subcommittee at its fifty-fifth session, in 2016 (A/AC.105/1113, annex I, para. 11), which contained a consolidated list of thematic priorities, as recommended by the Scientific and Technical Subcommittee at its fifty-third session (A/AC.105/1109, annex I, para. 8) and by the Legal Subcommittee at its fifty-fifth session (document A/AC.105/1113, annex I, para. 10).

296. The Committee endorsed the following seven thematic priorities of UNISPACE+50, their objectives and mechanisms:

1. *Global partnership in space exploration and innovation*

Objective: Raise awareness of space exploration and innovation as essential drivers for opening up new domains in space science and technology, triggering new partnerships and developing capabilities that create new opportunities for addressing global challenges. Foster dialogue with the space industry and the private sector. Promote cooperation between spacefaring nations and emerging space nations. Allow space exploration activities to become open and inclusive on a global scale. Identify governance and cooperation mechanisms to support this objective.

Mechanism: A new action team to be established to develop a plan of activities to be approved at UNISPACE+50 in 2018 and to identify a mechanism for coordinating global space exploration efforts. Action team, to be led by States members of the Committee on a voluntary basis, with the Office for Outer Space Affairs to provide substantive and secretariat support. The Office can build on successful experiences dealing with international mechanisms, for example in acting as the executive secretariat of ICG, which was established by an action team originating from UNISPACE III.

2. *Legal regime of outer space and global space governance: current and future perspectives*

Objective: Promote the universality of the five United Nations treaties on outer space. Assess the state of affairs of those treaties and their relationship with other relevant international instruments, such as principles, resolutions and guidelines governing space activities. Analyse the effectiveness of the legal regime of outer space in the twenty-first century, with a view to identifying areas that may require additional regulation. Conduct an evaluation by:

(a) Developing the questionnaire of the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space to encompass an assessment of the legal regime of outer space as a pillar of global space governance. The questionnaire should be used in the period leading up to 2018 to assist the Legal Subcommittee in addressing the status and scope of, and assessing and, as appropriate, addressing possible gaps in, the legal regime of outer space;

(b) Studying potential future legal and institutional initiatives intended to ensure that outer space is explored and used for peaceful purposes and that access to outer space remains open and free for the benefit of all countries, in order to ensure that international space law is a relevant part of global space governance in the twenty-first century in the light of the significant scientific developments and technical advances that have affected space activities;

(c) Studying legal mechanisms to foster an international regime of responsibility and liability to cope with present and future challenges to the safety, security and sustainability of outer space activities and the safety of space operations, perspectives of space traffic management and an enhanced exchange of information on space objects and events. Specific consideration is to be given to current practical concerns of the international community, such as in-orbit collisions and interferences. In particular, there should be an assessment of the need for enhanced registration and notification procedures and their institutional requirements under the registration and notification platform maintained by the Office for Outer Space Affairs;

(d) Identifying, by 2018, approaches and possible criteria for developing, by 2020, a guidance document to be issued by the Committee on the Peaceful Uses of Outer Space with essential information on the state of affairs of the legal regime governing outer space, including relevant instruments applied through national regulatory frameworks and international mechanisms for cooperation. Such a document should serve as valuable guidance for States wishing to become a party to the five United Nations treaties on outer space;

(e) Considering means to strengthen the Legal Subcommittee as the prime multilateral body with a mandate to promote the progressive development of international space law, including procedural and institutional improvements and closer cooperation with the Scientific and Technical Subcommittee.

Mechanism: Existing Working Group on the Status and Application of the Five United Nations Treaties on Outer Space of the Legal Subcommittee, which should coordinate its work with the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee.

3. *Enhanced information exchange on space objects and events*

Objective: Define and develop requirements for enhanced information exchange and notification procedures under the United Nations Register of Objects Launched into Outer Space, taking into account the recommendations contained in the report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities (A/68/189) and the future guidelines for the long-term sustainability of outer space activities specifically addressing risk-reduction notification needs. Identify cooperation mechanisms to support this objective. Encourage capacity-building and outreach activities on transparency and confidence-building measures.

Mechanism: A new agenda item to be considered for establishment by the Scientific and Technical Subcommittee at its fifty-fourth session in 2017, entitled "Enhanced information exchange on space objects and events", with a working group under a multi-year workplan covering the period 2018-2020 that will coordinate its work with the Legal Subcommittee and the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee.

4. *International framework for space weather services*

Objective: Strengthen the reliability of space systems and their ability to respond to the impact of adverse space weather. Develop a space weather road map

for international coordination and information exchange on space weather events and their mitigation, through risk analysis and assessment of user needs. Recognize space weather as a global challenge and the need to address the vulnerability of society as a whole. Increase awareness through developed communication, capacity-building and outreach. Identify governance and cooperation mechanisms to support this objective.

Mechanism: Existing Expert Group on Space Weather of the Scientific and Technical Subcommittee, to be substantively supported by the Office for Outer Space Affairs. Space weather-related activities to be implemented also through the capacity-building activities of the Office and through the role of the Office as the executive secretariat of ICG. Taking into account the existing workplan of the Expert Group (as contained in document A/AC.105/1088, para. 169).

5. *Strengthened space cooperation for global health*

Objective: Improve the use of space technologies and space-based information and systems in the global health domain. Promote enhanced cooperation and sharing of information in emergencies, epidemics and early warning events, as well as on environmental parameters. Enhance capability in integrating health data in disaster management plans. Strengthen capacity-building in advancing space technologies in global health efforts. Identify governance and cooperation mechanisms to support this objective.

Mechanism: Existing Expert Group on Space and Global Health of the Scientific and Technical Subcommittee, to be substantively supported by the Office for Outer Space Affairs. Space and global health-related activities to be implemented also through the capacity-building activities of the Office, and taking into account the existing workplan of the Expert Group (as contained in document A/AC.105/1088, annex I, para. 7).

6. *International cooperation towards low-emission and resilient societies*

Objective: Define synergies between climate change mitigation efforts, disaster risk reduction and global development and reducing emissions by replacing carbon energy with renewable energy. Develop a road map for enhanced resiliency of space-based systems and the affiliation of existing and future Earth observation, global navigation satellite system and telecommunication constellations for disaster risk reduction and climate change monitoring and mitigation. Improve integrated space applications approaches and the interoperability of space-based systems and ground/in situ systems. Provide requirements to new developers for coverage in geographical areas not sufficiently monitored or applications that need further development. Identify governance and cooperation mechanisms to support this objective.

Mechanism: The Office for Outer Space Affairs to undertake the work under this thematic priority and report regularly to the Committee and its Subcommittees on the work under this thematic priority.

7. *Capacity-building for the twenty-first century*

Objective: Define new innovative and effective approaches to overall capacity-building and development needs as a fundamental pillar of global space

governance. Strengthen comprehensive capacity-building and outreach activities of the Office for Outer Space Affairs. Develop infrastructure for cross-sectoral and integrated applications, with combined scientific, technical, legal and policy outputs. Enhance existing partnerships and forge new ones to strengthen and deliver targeted capacity-building and technical advisory activities based on needs assessments. Promote efforts to encourage science, technology, engineering and mathematics education, especially for women in developing countries.

Mechanism: The Office for Outer Space Affairs to undertake the work under this thematic priority and report regularly to the Committee and its Subcommittees on the work under this thematic priority.

297. The Committee noted that, in order to allow for timely actions in the lead-up to UNISPACE+50, in 2018, the respective mechanisms under each of the thematic priorities, in coordination with the Secretariat, would begin preparations during the intersessional period to develop further expected outcomes and workplans with timelines under each thematic priority, for consideration and agreement by delegations at the sessions of the Committee and its Subcommittees in 2017 and thereafter.

298. The Committee called upon States members of the Committee to put forward in writing their nominations to lead and co-lead a new action team, to be established under the thematic priority on global partnership in space exploration and innovation, to the Secretariat by the end of July 2016.

299. The Committee welcomed the proposal contained in conference room paper A/AC.105/2016/CRP.6, and agreed that the initiative would be included in the preparations for UNISPACE+50.

300. The Committee welcomed the proposal by IAF on the topic for the symposium entitled "Space: What is at stake in 2017 and 2018", to be held at the fifty-fourth session of the Scientific and Technical Subcommittee, in 2017, in accordance with the agreement of the Scientific and Technical Subcommittee at its fifty-third session (A/AC.105/1109, para. 263) and agreed that the Secretariat would liaise with IAF in the intersessional period to align the symposium with the UNISPACE+50 endeavour.

301. The Committee noted a number of proposals related to UNISPACE+50 in conjunction with the sixty-first session of the Committee, which had been tentatively scheduled from 20 to 29 June 2018, with an additional two days (18 and 19 June 2018) allocated to symposium and outreach events (see A/AC.105/2016/CRP.3, paras. 13-18).

302. The Committee also noted the proposal for an exhibition, to be held in conjunction with the sixty-first session of the Committee, in 2018, and that the Office for Outer Space Affairs should start preparations, in cooperation with Member States and other stakeholders, to organize a UNISPACE+50 exhibition, on the theme "Space for sustainable development", to be held from 18 to 29 June 2018 at the Vienna International Centre.

303. The Committee welcomed the proposals by the Office for Outer Space Affairs on preparatory work for UNISPACE+50, and invited States members of the Committee to volunteer to host United Nations workshops and conferences during the period June 2016-December 2017 that would present the thematic priorities to

Member States and space-related regional and international stakeholders and engage them further in the implementation process. States members of the Committee were invited to express their willingness to host such activities to the Secretariat before the end of July 2016.

304. The Committee commended the Office for Outer Space Affairs for its efficient preparation of the documentation in preparation for UNISPACE+50, including by issuing a conference room paper on the Committee on the Peaceful Uses of Outer Space and global space governance (A/AC.105/2016/CRP.4). That paper contained a historical overview of the UNISPACE conferences and connected the resulting mandates and programmes with the way towards the fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space. The Committee noted that the paper had been made available to the Committee and its Subcommittees at their sessions in 2016 and would subsequently be updated to reflect the suggestions made during those sessions. The final version would be circulated in the six official languages of the United Nations at the sessions of the Committee and its Subcommittees held in 2017.

305. The Committee also welcomed with appreciation the strong emphasis on the outreach component of UNISPACE+50 that aimed to engage all relevant stakeholders, including States that were not yet members of the Committee, permanent observers, the private sector, as appropriate, civil society and the media, in an all-inclusive manner to foster global space governance for the twenty-first century. In that regard, the Committee encouraged the Office for Outer Space Affairs and the UNISPACE+50 Steering Committee to continue their outreach efforts through participation at conferences, lectures and other awareness-raising activities in order to present UNISPACE+50 through its thematic priorities and their deliverables to a wider audience.

306. The Committee also welcomed with appreciation the presentation of the branding for UNISPACE+50, which was made by the Director of the Office for Outer Space Affairs.

307. The Committee welcomed with appreciation the engagement by the Office for Outer Space Affairs in working towards UNISPACE+50 in 2018 and noted that, in order to strengthen the Office's human resources and financial structure to be able to perform all the preparatory activities related to UNISPACE+50, the Office had launched the Multi-Donor Strategic Support to UNISPACE+50 initiative, which sought to provide flexible, coordinated and predictable funding on a voluntary basis.

308. The Committee noted that the Office for Outer Space Affairs had invited States members and permanent observers of the Committee to support the Multi-Donor Strategic Support initiative in order to prepare, structure and implement activities on the promotion of space-based applications and technologies for innovative and timely actions to support Member States in meeting objectives of the global development agenda.

2. Proposed strategic framework for the programme on the peaceful uses of outer space for the period 2018-2019

309. The Committee had before it for its consideration the proposed strategic framework for the programme on the peaceful uses of outer space for the

period 2018-2019 (A/71/6 (Prog. 5)). The Committee agreed on the proposed strategic framework.

3. Composition of the bureaux of the Committee and its subsidiary bodies for the period 2018-2019

310. In accordance with General Assembly resolution 70/82 and pursuant to the measures relating to the working methods of the Committee and its subsidiary bodies,[3] as endorsed by the General Assembly in its resolution 52/56, the Committee considered the question of the composition of the bureaux of the Committee and its subsidiary bodies for the period 2018-2019.

311. The Chair of the Committee drew the attention of the delegations to the fact that not all regional groups had submitted their nominations at the current session. In that connection, the Chair requested all regional groups to submit their nominations as soon as practicable and no later than by the start of the sixtieth session of the Committee, in 2017.

4. Membership of the Committee

312. The Committee welcomed the application of New Zealand for membership in the Committee (see A/AC.105/2016/CRP.7).

313. The Committee decided to recommend to the General Assembly at its seventy-first session, in 2016, that New Zealand should become a member of the Committee.

5. Observer status

314. The Committee took note of the application of IATA for permanent observer status with the Committee. The application and the relevant correspondence were before the Committee in conference room paper A/AC.105/2016/CRP.8.

315. The Committee decided to recommend that the General Assembly, at its seventy-first session, in 2016, grant to IATA the status of permanent observer with the Committee.

316. In accordance with the request of the Committee at its fifty-sixth session, in 2013, the Secretariat had compiled information on the consultative status with the Economic and Social Council of non-governmental organizations having permanent observer status with the Committee (A/AC.105/2016/CRP.9). The Committee urged non-governmental organizations having permanent observer status with it that had not yet initiated the application process for consultative status with the Council to do so in the near future.

6. Organizational matters

317. The Committee welcomed with appreciation the compendium of rules of procedure and methods of work related to the Committee and its subsidiary bodies contained in conference room paper A/AC.105/2016/CRP.5 and prepared by the

[3] *Official Records of the General Assembly, Fifty-second Session, Supplement No. 20* (A/52/20), annex I; see also *Official Records of the General Assembly, Fifty-eighth Session, Supplement No. 20* (A/58/20), annex II, appendix III.

Secretariat in accordance with the request made by the Committee in 2015 (A/70/20, para. 359).

7. Draft provisional agenda for the sixtieth session of the Committee

318. The Committee recommended that the following items should be considered at its sixtieth session, in 2017:

1. General exchange of views.
2. Ways and means of maintaining outer space for peaceful purposes.
3. Report of the Scientific and Technical Subcommittee on its fifty-fourth session.
4. Report of the Legal Subcommittee on its fifty-sixth session.
5. Space and sustainable development.
6. Spin-off benefits of space technology: review of current status.
7. Space and water.
8. Space and climate change.
9. Use of space technology in the United Nations system.
10. Future role of the Committee.
11. Other matters.

319. The Committee endorsed the recommendation made by the Legal Subcommittee at its fifty-fifth session that a high-level panel discussion should be held on the afternoon of the opening day of the sixtieth session of the Committee to provide legal, policy and scientific and technical perspectives related to the Outer Space Treaty, to be organized by the Office for Outer Space Affairs, taking into account equitable geographical and gender representation in the panel (A/AC.105/1113, para. 57, and annex I, para. 19 (b)).

320. Some delegations expressed the view that the Committee should introduce a new agenda item entitled "Combating terrorism using space technology" and that, in order to combat the threat of international terrorism, spacefaring nations should make available, at no cost, high-resolution imagery to countries with no such capabilities. In that connection, the Committee had before it a conference room paper outlining the detailed contents and expected outcome of the proposed agenda item (A/AC.105/2016/CRP.18).

321. Some delegations expressed the view that combating terrorism was an issue of utmost importance for international peace and security and that the proposal for addressing the issue in the Committee should be carefully studied and addressed at the forthcoming session of the Committee.

322. The view was expressed that, owing to the unique position of the Committee in promoting international cooperation in using outer space for peaceful purposes and owing to its unique composition of representatives from diplomatic and scientific circles, the Committee should address, in the future, the pertinent issue of combating terrorism by using space technology.

323. Some delegations expressed the view that there were other mechanisms in the United Nations system that already addressed the issue effectively within their mandates and that the subject matter was not within the mandate of the Committee, which was to promote the peaceful use of outer space.

K. Schedule of work of the Committee and its subsidiary bodies

324. The Committee agreed on the following tentative timetable for its session and those of its Subcommittees in 2017:

	Date	*Location*
Scientific and Technical Subcommittee	30 January to 10 February 2017	Vienna
Legal Subcommittee	27 March to 7 April 2017	Vienna
Committee on the Peaceful Uses of Outer Space	7 to 16 June 2017	Vienna

Annex

Guidelines for the long-term sustainability of outer space activities: first set[a]

A. Policy and regulatory framework for space activities

Guidelines 1, 2, 3 and 4 provide guidance on the development of policies, regulatory frameworks and practices that support the long-term sustainability of outer space activities for Governments and relevant international intergovernmental organizations authorizing or conducting space activities.

Guideline 1

Adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities

1.1 States should adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities, taking into account their obligations under the United Nations treaties on outer space as States responsible for national activities in outer space and as launching States. When adopting, revising, amending or implementing national regulatory frameworks, States should consider the need to ensure and enhance the long-term sustainability of outer space activities.

1.2 With the increase in outer space activities by governmental and non-governmental actors from around the world, and considering that States bear international responsibility for the space activities of non-governmental entities, States should adopt, revise or amend regulatory frameworks to ensure the effective application of relevant, generally accepted international norms, standards and practices for the safe conduct of outer space activities.

1.3 When developing, revising, amending or adopting national regulatory frameworks, States should consider the provisions of General Assembly resolution 68/74, on recommendations on national legislation relevant to the peaceful exploration and use of outer space. In particular, States should consider not only existing space projects and activities but also, to the extent practicable, the potential development of their national space sector, and envisage appropriate, timely regulation in order to avoid legal lacunae.

1.4 States, in enacting new regulations, or in revising or amending existing legislation, should bear in mind their obligations under article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. Traditionally, national regulations have been concerned with issues such as safety, liability, reliability and cost. As new regulations are developed, States should consider regulations that enhance the long-term sustainability of outer space activities. At the same time, regulations should not be so prescriptive as to prevent initiatives addressing the long-term sustainability of outer space activities.

[a] See paragraphs 133-137 of the present report.

Guideline 2

Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities

2.1 When developing, revising or amending, as necessary, regulatory measures applicable to the long-term sustainability of outer space activities, States and international intergovernmental organizations should implement international obligations, including those arising under the United Nations space treaties to which they are party.

2.2 In developing, revising or amending, as necessary, national regulatory frameworks, States and international intergovernmental organizations should:

(a) Consider the provisions of General Assembly resolution 68/74, on recommendations on national legislation relevant to the peaceful exploration and use of outer space;

(b) Implement space debris mitigation measures, such as the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, through applicable mechanisms;

(c) Address, to the extent practicable, risks to people, property, public health and the environment associated with the launch, in-orbit operation and re-entry of space objects;

(d) Promote regulations and policies that support the idea of minimizing the impacts of human activities on Earth as well as on the outer space environment. They are encouraged to plan their activities based on the Sustainable Development Goals, their main national requirements, and international considerations for the sustainability of space and the Earth;

(e) Implement the guidance contained in the Safety Framework for Nuclear Power Source Applications in Outer Space and satisfy the intent of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space through applicable mechanisms that provide a regulatory, legal and technical framework that sets out responsibilities and assistance mechanisms, prior to using nuclear power sources in outer space;

(f) Consider the potential benefits of using existing international technical standards, including those published by the International Organization for Standardization (ISO), the Consultative Committee for Space Data Systems and national standardization bodies. In addition, States should consider the utilization of recommended practices and voluntary guidelines proposed by the Inter-Agency Space Debris Coordination Committee and the Committee on Space Research;

(g) Weigh the costs, benefits, disadvantages and risks of a range of alternatives and ensure that such measures have a clear purpose and are implementable and practicable in terms of the technical, legal and management capacities of the State imposing the regulation. Regulations should also be efficient in terms of limiting the cost for compliance (e.g., in terms of money, time or risk) compared with feasible alternatives;

(h) Encourage advisory input from affected national entities during the process of developing regulatory frameworks governing space activities to avoid

unintended consequences of regulation that might be more restrictive than necessary or that conflicts with other legal obligations;

(i) Examine and adapt existing relevant legislation to ensure its compliance with these guidelines, considering the need for transition periods appropriate to their level of technical development.

Guideline 3

Supervise national space activities

3.1 In supervising space activities of non-governmental entities, States should ensure that entities under their jurisdiction and/or control that conduct outer space activities have the appropriate structures and procedures for planning and conducting space activities in a manner that supports the objective of enhancing the long-term sustainability of outer space activities, and that they have the means to comply with relevant national and international regulatory frameworks, requirements, policies and processes in this regard.

3.2 States bear international responsibility for national activities in outer space and for the authorization and continuing supervision of such activities, which are to be carried out in conformity with applicable international law. In fulfilling this responsibility, States should encourage each entity conducting space activities to:

(a) Establish and maintain all the necessary technical competencies required to conduct the outer space activities in a safe and responsible manner and to enable the entity to comply with the relevant governmental and intergovernmental regulatory frameworks, requirements, policies and processes;

(b) Develop specific requirements and procedures to address the safety and reliability of outer space activities under the entity's control, during all phases of a mission life cycle;

(c) Assess all risks to the long-term sustainability of outer space activities associated with the space activities conducted by the entity, in all phases of the mission life cycle, and take steps to mitigate such risks to the extent feasible.

3.3 In addition, States are encouraged to designate a responsible entity or entities to plan, coordinate and assess space activities with the aim of promoting their effectiveness in supporting the Sustainable Development Goals and in supporting the objectives of the guidelines for the long-term sustainability of outer space activities in a broader perspective and vision.

3.4 States should ensure that the management of an entity that conducts outer space activities establishes structures and procedures for planning and conducting space activities in a manner that supports the objective of promoting the long-term sustainability of outer space activities. Appropriate measures to be taken by management in this regard should include:

(a) A commitment at the highest levels of the entity to promoting the long-term sustainability of outer space activities;

(b) Establishing and fostering an organizational commitment to promoting the long-term sustainability of outer space activities within the entity, as well as in relevant interactions with other entities;

(c) Urging, to the extent practicable, that the entity's commitment to the long-term sustainability of outer space activities is reflected in its management structure and procedures for planning, developing and conducting outer space activities;

(d) Encouraging, as appropriate, the sharing of the experiences of the entity in the conduct of safe and sustainable outer space activities as a contribution by the entity to enhancing the long-term sustainability of outer space activities;

(e) Designating a contact point within the entity responsible for communication with relevant authorities to facilitate efficient and timely sharing of information and coordination of potentially urgent measures to promote the safety and sustainability of outer space activities.

3.5 States should ensure that appropriate communication and consultation mechanisms are in place within and among the competent bodies that oversee or conduct space activities. Communication within and among relevant regulatory bodies can promote regulations that are consistent, predictable and transparent so as to ensure that regulatory outcomes are as intended.

Guideline 4

Ensure the equitable, rational and efficient use of the radio frequency spectrum and the various orbital regions used by satellites

4.1 In fulfilling their obligations under the Constitution and the Radio Regulations of the International Telecommunication Union (ITU), States should pay particular attention to the long-term sustainability of space activities and sustainable development on Earth and to facilitating the prompt resolution of identified harmful radio frequency interference.

4.2 As provided for in article 44 of the ITU Constitution, radio frequencies and any associated orbits, including the geostationary-satellite orbit, are limited natural resources that must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to those orbits and frequencies, taking into account the special needs of developing countries and the geographical situation of particular countries.

4.3 Consistent with the purpose of article 45 of the ITU Constitution, States and international intergovernmental organizations should ensure that their space activities are conducted in such a manner as not to cause harmful interference with the reception and transmission of radio signals related to the space activities of other States and international intergovernmental organizations, as one of the means of promoting the long-term sustainability of outer space activities.

4.4 In their use of the electromagnetic spectrum, States and international intergovernmental organizations should consider the requirements for space-based Earth observation systems and other space-based systems and services in support of

sustainable development on Earth, in accordance with the ITU Radio Regulations and the ITU-R Recommendations.

4.5 States and international intergovernmental organizations should ensure the implementation of the radio regulation procedures established by ITU for space radio links. Moreover, States and international intergovernmental organizations should encourage and support regional and international cooperation aimed at improving efficiency in decision-making and implementation of practical measures to eliminate identified harmful radio frequency interference in space radio links.

4.6 Spacecraft and launch vehicle orbital stages that have terminated their operational phases in orbits that pass through the low-Earth orbit (LEO) region should be removed from orbit in a controlled fashion. If this is not possible, they should be disposed of in orbits that avoid their long-term presence in the LEO region. Spacecraft and launch vehicle orbital stages that have terminated their operational phases in orbits that pass through the geosynchronous Earth orbit (GEO) region should be left in orbits that avoid their long-term interference with the GEO region. For space objects in or near the GEO region, the potential for future collisions can be reduced by leaving objects at the end of their mission in an orbit above the GEO region such that they will not interfere with, or return to, the GEO region.

B. Safety of space operations

Guidelines 12, 13, 16 and 17 provide guidance to Governments and relevant international intergovernmental organizations on the conduct of space operations in a manner that supports the safety and long-term sustainability of outer space activities.

Guideline 12

Improve accuracy of orbital data on space objects and enhance the practice and utility of sharing orbital information on space objects

12.1 States and international intergovernmental organizations should promote the development and use of techniques and methods to improve the accuracy of orbital data for spaceflight safety and the use of common, internationally recognized standards when sharing orbital information on space objects.

12.2 Recognizing that spaceflight safety strongly depends upon the accuracy of orbital and other relevant data, States and international intergovernmental organizations should promote techniques and the investigation of new methods to improve such accuracy. Those methods could include national and international activities to improve the capabilities and geographical distribution of existing and new sensors, use of passive and active on-orbit tracking aids, and combining and validating data from different sources. Special attention should be paid to encouraging the participation and capacity-building of developing countries with emerging space capabilities in this domain.

12.3 When sharing orbital information on space objects, operators and other appropriate entities should be encouraged to use common, internationally recognized standards to enable collaboration and information exchange. Facilitating

greater shared awareness of the current and predicted location of space objects would enable timely prediction and prevention of potential collisions.

Guideline 13

Promote the collection, sharing and dissemination of space debris monitoring information

13.1 States and international intergovernmental organizations should encourage the development and use of relevant technologies for the measurement, monitoring and characterization of the orbital and physical properties of space debris. States and international intergovernmental organizations should also promote the sharing and dissemination of derived data products and methodologies in support of research and international scientific cooperation on the evolution of the orbital debris population.

Guideline 16

Share operational space weather data and forecasts

16.1 States and international intergovernmental organizations should support and promote the collection, archiving, sharing, intercalibration, long-term continuity and dissemination of critical space weather data and space weather model outputs and forecasts, where appropriate in real time, as a means of enhancing the long-term sustainability of outer space activities.

16.2 States should be encouraged to monitor, to the extent feasible, space weather continuously and to share data and information with the aim of establishing an international space weather database network.

16.3 States and international intergovernmental organizations should support the identification of data sets critical for space weather services and research and should consider adopting policies for the free and unrestricted sharing of critical space weather data from their space- and ground-based assets. All governmental, civilian and commercial space weather data owners are urged to allow free and unrestricted access to and archiving of such data for mutual benefit.

16.4 States and international intergovernmental organizations should also consider sharing real-time and near-real-time critical space weather data and data products in a common format, promote and adopt common access protocols for their critical space weather data and data products, and promote the interoperability of space weather data portals, thus promoting ease of data access for users and researchers. The real-time sharing of these data could provide a valuable experience for sharing in real time other kinds of data relevant to the long-term sustainability of outer space activities.

16.5 States and international intergovernmental organizations should further undertake a coordinated approach to maintaining the long-term continuity of space weather observations and identifying and filling key measurement gaps, so as to meet critical needs for space weather information and/or data.

16.6 States and international intergovernmental organizations should identify high-priority needs for space weather models, space weather model outputs and space weather forecasts and adopt policies for free and unrestricted sharing of space

weather model outputs and forecasts. All governmental, civilian and commercial space weather model developers and forecast providers are urged to allow free and unrestricted access to and archival of space weather model outputs and forecasts for mutual benefit, which will promote research and development in this domain.

16.7 States and international intergovernmental organizations should also encourage their space weather service providers to:

(a) Undertake comparisons of space weather model and forecast outputs with the goal of improved model performance and forecast accuracy;

(b) Openly share and disseminate historical and future critical space weather model outputs and forecast products in a common format;

(c) Adopt common access protocols for their space weather model outputs and forecast products to the extent possible, to promote their ease of use by users and researchers, including through interoperability of space weather portals;

(d) Undertake coordinated dissemination of space weather forecasts among space weather service providers and to operational end users.

Guideline 17

Develop space weather models and tools and collect established practices on the mitigation of space weather effects

17.1 States and international intergovernmental organizations should undertake a coordinated approach to identifying and filling gaps in research and operational models and forecasting tools required to meet the needs of the scientific community and of the providers and users of space weather information services. Where possible, this should include coordinated efforts to support and promote research and development to further advance space weather models and forecasting tools, incorporating the effects of the changing solar environment and evolving terrestrial magnetic field as appropriate, including within the context of the Committee on the Peaceful Uses of Outer Space and its Subcommittees, as well as in collaboration with other entities such as the World Meteorological Organization and the International Space Environment Service.

17.2 States and international intergovernmental organizations should support and promote cooperation and coordination on ground- and space-based space weather observations, forecast modelling, satellite anomalies and reporting of space weather effects in order to safeguard space activities. Practical measures in this regard could include:

(a) Incorporating current and forecast space weather thresholds into space launch criteria;

(b) Encouraging satellite operators to cooperate with space weather service providers to identify the information that would be most useful to mitigate anomalies and to derive recommended specific guidelines for on-orbit operations. For example, if the radiation environment is hazardous, this might include actions to delay the uploading of software, implementation of manoeuvres, etc.;

(c) Encouraging the collection, collation and sharing of information relating to ground- and space-based space weather-related impacts and system anomalies, including spacecraft anomalies;

(d) Encouraging the use of a common format for reporting space weather information. In relation to the reporting of spacecraft anomalies, satellite operators are encouraged to take note of the template proposed by the Coordination Group for Meteorological Satellites;

(e) Encouraging policies promoting the sharing of satellite anomaly data related to space weather-induced effects;

(f) Encouraging training on and knowledge transfer relating to the use of space weather data, taking into account the participation of countries with emerging space capabilities.

17.3 It is acknowledged that some data may be subject to legal restrictions and/or measures for the protection of proprietary or confidential information, in accordance with national legislation, multilateral commitments, non-proliferation norms and international law.

17.4 States and international intergovernmental organizations should work towards the development of international standards and the collection of established practices applicable for the mitigation of space weather effects in satellite design. This could include the sharing of information on design practices, guidelines and lessons learned relating to mitigation of the effects of space weather on operational space systems, as well as documentation and reports relating to space weather user needs, measurement requirements, gap analyses, cost-benefit analyses and related space weather assessments.

17.5 States should encourage entities under their jurisdiction and/or control to:

(a) Incorporate in satellite designs the capability to recover from a debilitating space weather effect, such as by including a safe mode;

(b) Incorporate space weather effects into satellite designs and mission planning for end-of-life disposal in order to ensure that the spacecraft either reach their intended graveyard orbit or de-orbit appropriately, in accordance with the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space. This should include appropriate margin analysis.

17.6 International intergovernmental organizations should also promote such measures among their member States.

17.7 States should undertake an assessment of the risk and socioeconomic impacts of adverse space weather effects on the technological systems in their respective countries. The results from such studies should be published and made available to all States and used to inform decision-making relating to the long-term sustainability of outer space activities, particularly with regard to mitigating the adverse impacts of space weather on operational space systems.

C. International cooperation, capacity-building and awareness

Guidelines 25 and 26 provide guidance on international cooperation measures aimed at promoting the long-term sustainability of outer space activities among Governments and relevant international intergovernmental organizations authorizing or conducting space activities.

Guideline 25

Promote and support capacity-building

25.1 States and international intergovernmental organizations with experience in space activities should encourage and support capacity-building in developing countries with emerging space programmes, on a mutually acceptable basis, through measures such as improving their expertise and knowledge on spacecraft design, flight dynamics and orbits, performing joint orbital calculations and conjunction assessments, and providing access to appropriate precise orbital data and appropriate tools for the monitoring of space objects through relevant arrangements as appropriate.

25.2 States and international intergovernmental organizations should support current capacity-building initiatives and promote new forms of regional and international cooperation and capacity-building that are in accordance with national and international law to assist countries in gathering human and financial resources and achieving efficient technical capabilities, standards, regulatory frameworks and governance methods that support the long-term sustainability of outer space activities and sustainable development on Earth.

25.3 States and international intergovernmental organizations should coordinate their efforts in space-related capacity-building and data accessibility in order to ensure efficiency in the use of available resources and, to the extent that it is reasonable and relevant, avoid unnecessary duplication of functions and efforts, taking into account the needs and interests of developing countries. Capacity-building activities include education, training and sharing of appropriate experience, information, data, tools and management methodologies and techniques, as well as the transfer of technology.

25.4 States and international intergovernmental organizations should also undertake efforts to make relevant space-based information and data accessible to countries affected by natural disasters or other catastrophes, guided by considerations of humanity, neutrality and impartiality, and to support capacity-building activities aimed at enabling the receiving countries to make optimal use of such data and information. These space-based data and information with appropriate spatial and temporal resolution should be freely, quickly and easily available for countries in crisis.

Guideline 26

Raise awareness of space activities

26.1 States and international intergovernmental organizations should raise general public awareness of the important societal benefits of space activities and of the consequent importance of enhancing the long-term sustainability of outer space

activities. To this end, States and international intergovernmental organizations should:

(a) Promote institutional and public awareness of space activities and their applications for sustainable development, environmental monitoring and assessment, disaster management and emergency response;

(b) Conduct outreach, capacity-building and education on regulations and established practices relevant to the long-term sustainability of space activities;

(c) Promote activities of non-governmental entities that will enhance the long-term sustainability of outer space activities;

(d) Raise awareness among relevant public institutions and non-governmental entities about national and international policies, legislation, regulations and best practices that are applicable to space activities.

26.2 States and international intergovernmental organizations should promote public awareness of space applications for sustainable development, environmental monitoring and assessment, disaster management and emergency response through information-sharing and joint efforts with public institutions and non-governmental entities, taking into account the needs of current and future generations. In designing space education programmes, States, international intergovernmental organizations and non-governmental entities should pay special attention to courses on enhancing knowledge and practice of the utilization of space applications to support sustainable development. States and international intergovernmental organizations should initiate the voluntary collection of information on public awareness and education tools and programmes with a view to facilitating the development and implementation of other initiatives with similar objectives.

26.3 States and international intergovernmental organizations should foster outreach activities by or with industry, academia and other relevant non-governmental entities. Outreach, capacity-building and educational initiatives could take the form of seminars (in person or broadcast over the Internet), published guidelines to complement national and international regulations or a website with basic information on a regulatory framework and/or a contact point within the Government for regulatory information. Appropriately targeted outreach and education can assist all entities engaged in space activities in gaining a better appreciation and understanding of the nature of their obligations, in particular relating to implementation, which can lead to improved compliance with the existing regulatory framework and the practices currently being employed to enhance the long-term sustainability of outer space activities. This is particularly valuable where the regulatory framework has been changed or updated, resulting in new obligations for participants in space activities.

26.4 Cooperation between Governments and non-governmental entities should be encouraged and fostered. Non-governmental entities, including professional and industry associations and academic institutions, can play important roles in increasing international awareness of issues associated with space sustainability, as well as promoting practical measures to enhance space sustainability. Such measures could include adoption of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space; compliance with the ITU Radio Regulations related to space services; and the development of open, transparent

standards for the exchange of data necessary to avoid collisions, harmful radio frequency interference or other harmful events in outer space. Non-governmental entities can also play important roles in bringing stakeholders together to develop common approaches to certain aspects of space activities that can collectively enhance the long-term sustainability of space activities.

D. Scientific and technical research and development

Guidelines 27 and 28 provide guidance of a scientific and technical nature for Governments, international intergovernmental organizations and national and international non-governmental entities that conduct space activities. They encompass, among other things, the collection, archiving, sharing and dissemination of information on space objects and space weather, and the use of standards for information exchange. These guidelines also address research into and the development of ways to support the sustainable use and exploration of outer space.

Guideline 27

Promote and support research into and the development of ways to support sustainable exploration and use of outer space

27.1 States and international intergovernmental organizations should promote and support research into and the development of sustainable space technologies, processes and services and other initiatives for the sustainable exploration and use of outer space, including celestial bodies.

27.2 In their conduct of space activities for the peaceful exploration and use of outer space, including celestial bodies, States and international intergovernmental organizations should take into account, with reference to the outcome document of the United Nations Conference on Sustainable Development (General Assembly resolution 66/288, annex), the social, economic and environmental dimensions of sustainable development on Earth.

27.3 States and international intergovernmental organizations should promote the development of technologies that minimize the environmental impact of manufacturing and launching space assets and that maximize the use of renewable resources and the reusability or repurposing of space assets to enhance the long-term sustainability of those activities.

27.4 States and international intergovernmental organizations should consider appropriate safety measures to protect the Earth and the space environment from harmful contamination, taking advantage of existing measures, practices and guidelines that may apply to those activities, and developing new measures as appropriate.

27.5 States and international intergovernmental organizations conducting research and development activities to support the sustainable exploration and use of outer space should also encourage the participation of developing countries in such activities.

Guideline 28

Investigate and consider new measures to manage the space debris population in the long term

28.1 States and international intergovernmental organizations should investigate the necessity and feasibility of possible new measures, including technological solutions, and consider implementation thereof, in order to address the evolution of and manage the space debris population in the long term. These new measures, together with existing ones, should be envisaged so as not to impose undue costs on the space programmes of emerging spacefaring nations.

28.2 States and international intergovernmental organizations should take measures at the national and international levels, including international cooperation and capacity-building, to increase compliance with the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space.

28.3 Investigation of new measures could include, inter alia, methods for the extension of operational lifetime, novel techniques to prevent collision with and among debris and objects with no means of changing their trajectory, advanced measures for spacecraft passivation and post-mission disposal and designs to enhance the disintegration of space systems during uncontrolled atmospheric re-entry.

28.4 Such new measures aimed at ensuring the sustainability of space activities and involving either controlled or uncontrolled re-entries should not pose an undue risk to people or property, including through environmental pollution caused by hazardous substances.

28.5 Policy and legal issues, such as ensuring that these new measures are compliant with the provisions of the Charter of the United Nations and applicable international law, may also need to be addressed.